The Northwestern MILLER
MILLING PRODUCTION SECTION

A Practical Method of Measuring
Flour Particle Size

By J. L. CROTEAU

SINCE early times many advances in milling technology have been associated with better control of the grinding and classifying process. In a recent development, finished flour is further processed by air classification to produce several unique fractions. One of the important characteristics of the fractions resulting from this new process is their individual size distributions.

Control of the process and its products requires the use of methods of measuring particle size in the sub sieve range. This size range includes those particles between the sieve range and the colloid range. Although the largest particles in the range are only one tenth of a millimeter in diameter, the range can be considered to be as large as its neighbors in that the coarsest particles in the range are about 500 times larger than the smallest. (This is the relationship of a beach ball to the ball of a ballpoint pen.)

Methods available for measuring particle size in the sub sieve range will be briefly reviewed, with accent on methods especially adaptable to quality control.

An ordinary microscope will resolve particles from .2 micron to 100 microns in size, and microscopic analysis is one of the methods of obtaining particle size information. Other methods are frequently based on measurements of some property affected by the surface to weight ratio which increases as the size decreases. Among these properties are absorption, solubility, reaction rates, optical properties and sedimentation rates.

The methods can be classified into three principal categories, based up-

EDITOR'S NOTE—Mr. Croteau's article is being published in conjunction with the American Association of Cereal Chemists.

on the kind of information obtained from them:

1. Counting and Sizing Methods, in which the number of particles in various size classifications is determined.
2. Weighing and Sizing Methods, in which the weights or volume of particles in various size classifications is determined.
3. Methods in which the specific surface is determined.

In counting and sizing methods the individual particles are measured,

(Turn to MEASURING, page 8a)

FIG. 1
Sedimentation Rates of Flour Particles in Benzene

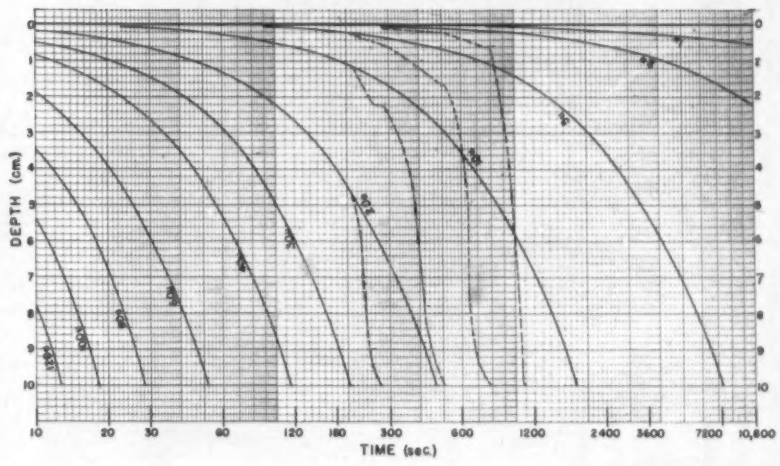


FIGURE 2
GRAPHICAL REPRESENTATION OF DATA—HISTOGRAM—SIZE FREQUENCY CURVE—RELATIONSHIP OF STATISTICAL MEANS

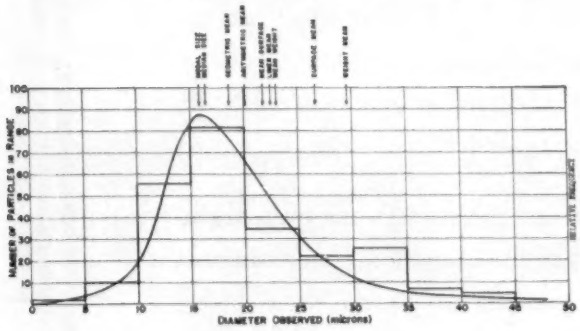
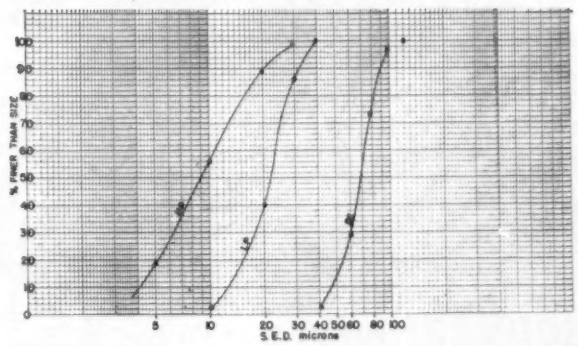


FIGURE 3
CUMULATIVE WEIGHT PER CENT CURVES OF SOME TURBO FLOURS
(Products of the new air classification process)



CROSS SECTIONS OF 2 BEDS OF UNIFORM SPHERES
EACH EQUAL IN THE VOLUME OF SOLIDS AND OF VOIDS PER UNIT LENGTH
BUT DIFFERING IN PERMEABILITY AND SPECIFIC SURFACE

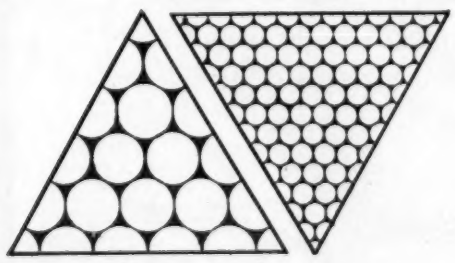


FIGURE 4
Cross sections of 2 beds of uniform spheres each equal in the volume of solids and of voids per unit length but differing in permeability and specific surface.

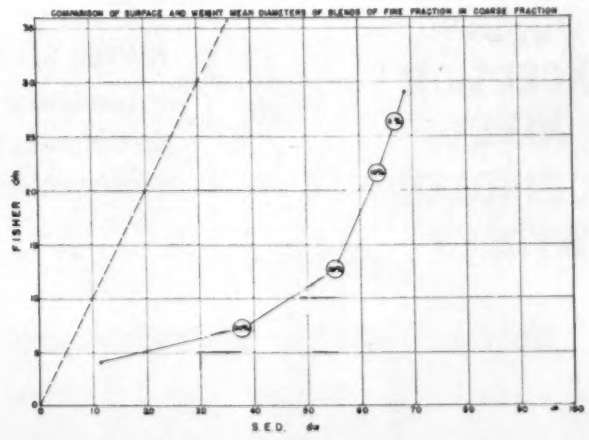


FIGURE 6
Comparison of Surface and Weight Mean Diameters of Blends of Fine Fraction in Coarse Fraction.

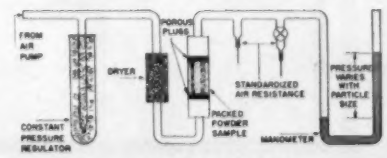


FIGURE 5
SUB SIEVE SIZER

It is significant that over the last century despite vast changes in the manufacture of fine flour, our sifting cloth has been the acknowledged standard of excellence.

★ ★

SWISS SILK

BODMER
DUFOUR
EXCELSIOR
NITEX
SCHINDLER
WYDLER

★

IF YOU WERE A MILLER IN

1850

JENNY LIND

the Swedish songstress, made her debut at Castle Garden, New York, and this was the beginning of an era of American cultural, economic and territorial expansion.

The Compromise of 1850 brought temporary peace to the slavery controversy and the great west was booming and beckoning to settlers and homesteaders. The milling business, until now almost a localized industry, was on the threshold of mass production with St. Louis, Mo., as its undeclared capital.

Hard wheat from the northwest was beginning to supplant the standard American soft wheat, and greater emphasis was being placed on sifting control.

SWISS SILK, already well established, was in increasing demand and built its reputation as the finest bolting cloth in the field, a position it still enjoys today, over a century later.

A Preview of Exhibits at the AOM Trade Show

☆ ☆ *'Meet Me in St. Louis' May 22-26* ☆ ☆

OPERATIVE millers will be given a gleaming glimpse of the broad array of equipment, testing devices, research developments, automatic, pneumatic and simply "new" innovations available to their industry when they visit the exhibit booths at their annual technical conference in St. Louis May 22-26.

Scores of firms which dedicate their energies and talents to developing and providing machinery and services to milling have responded to a request to submit brief outlines of their exhibits for the AOM conference. This information appears here, in this issue, to provide those planning to attend a peek—and just that—of what will be found in St. Louis. Exhibitors, as in previous years, will provide trained technical and sales personnel at the conference to explain and demonstrate their products and machinery.

A number of those who have taken booth space indicate that they will have on hand working models of their equipment where space prohibits full-sized machines.

In keeping with the trend toward more time-saving, conservation of labor and cost-cutting methods, a number of exhibitors indicate that their exhibits will feature the latest in electronic and pneumatic equipment.

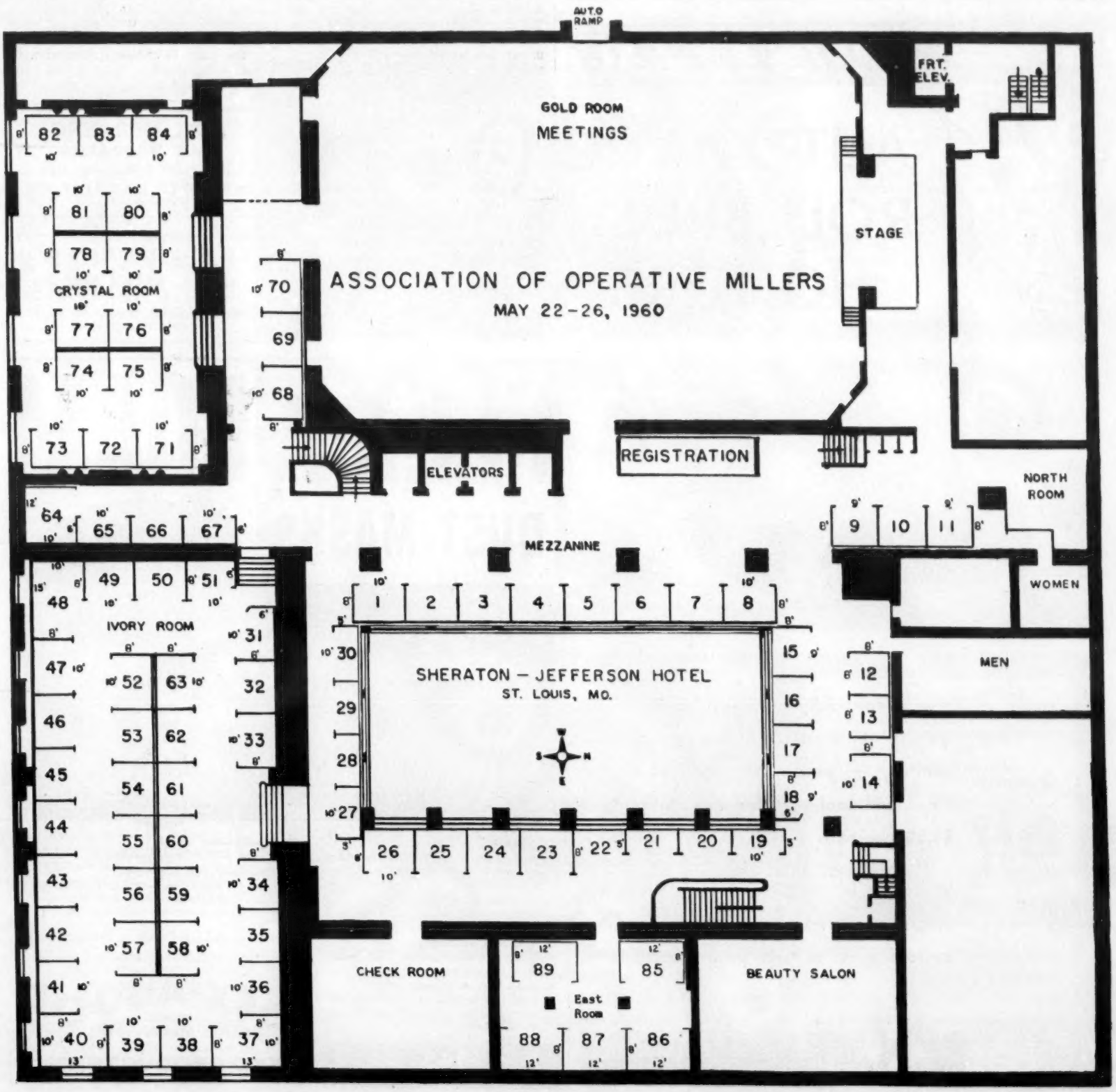
Headquarters, of course, will be the Sheraton-Jefferson Hotel in St. Louis. A diagram of the meeting rooms and exhibit floor, with exhibitors' booths numbered, accompanies this article. Also, the booth which each exhibitor will occupy is numbered in this article insofar as such information was supplied in time for publication.

NOS. 1, 2

Salina Mfg. Co., Inc.

On exhibit will be four Aerolocks showing the various sizes and rotor designs available. Additionally, Salina will display a 48-in. Blendvane unit, or volumetric feeder, along with a section on its extruded aluminum drop bottom conveyor with inlets, outlets and slide gate. Another item to be featured will be a completely portable rail car unloading unit built for one-man operation.

Accompanying the display will be accessories such as couplings, sight tubes, hangers, and reducers, with pictures of recent installations. There will be a scale model of a typical bulk storage unit. In attendance will be: Don L. Noyes, Robert Hoisington,



and possibly one additional company representative.

NOS. 9, 10

Sterwin Chemicals, Inc.

As in past years, Sterwin will be featuring its Hy-Kure bleaching and maturing equipment, and other equipment, as well as VextraM flour enrichment mixes, Oxylite flour bleach and Sterwin specialties, such as Bromate and others. To attend: L. R. Patton, assistant sales manager; L. P. Carmony, Minneapolis district; J. L. Campbell, Charlotte, N.C.; H. H. Bonham, Winnipeg; W. F. Keller, P. J. McGrath and W. O. Edmonds, Kansas City flour service division.

NO. 15

Bemis Bro. Bag Co.

Bemis will be exhibiting a Series 3181-R Deltaseal closing machine with a new control to assure package uniformity with uninterrupted operation. The Deltaseal closing machine will be operating so the mechanical features can be observed by the customers. Marshall C. Barnes, trade show manager, once again has developed the exhibit. He will be present to set up and supervise. Other Bemis Packaging Service personnel who will attend:

A. A. Hagstrom, field service supervisor, will be present to explain the mechanical operation in detail. He will be giving full machine demonstrations for the customers.

John Gunderson and T. I. B. Gray, sales representatives, will give special attention to the customers in carrying out further activities.

NO. 16

Thomas Robinson & Son, Ltd.

Robinson's exhibit will illustrate some interesting examples of the developments in mill planning which the company has achieved in recent years. Emphasis will be placed on the reduction of capital costs by the use of high capacity machinery, illustrated by recent Robinson installations, including the first flour mill in the Philippines.

NO. 17

Graton & Knight Co.

Graton & Knight will feature its research leather belting, Nycor nylon core belting, Revo improved all synthetic belt, and Sprazon, the original spray type belt dressing. In attendance: J. S. Crouse, T. P. Cook, J. R. Hoel and J. G. Henrickson.

NO. 18

Phoenix Gems, Inc.

The Perma Guard Division of Phoenix Gems, Inc., will have a miniature plastic elevator showing effectiveness of its totally safe nontoxic and permanent grain protectant. Literature and samples will be available. A. Louis de Lisle will give a more detailed discussion on the "What's New" program. Irving Manley of the Hayden Flour Mills, now using the technique, will also be at the booth. The method is in use in Old Mexico and at various places throughout the U.S.

NO. 19

Montgomery Belting & Leather Co.

In attendance for Montgomery Belting will be C. E. Montgomery and C. E. Danielson to explain and advise on use of their company's products.

NOS. 23, 24, 25, 26

Ross Machine & Mill Supply, Inc.

Ross will have a joint exhibit with associates, E. R. & F. Turner, Ltd., Ipswich, England. E. R. & F. Turner, Ltd., will be represented by A. R. Roote, chief milling engineer. It is the intention to feature the new T-R Line of equipment presently being introduced to the flour and feed industries. This exhibit will feature the T-R sanitary double roller mill; T-R extra heavy duty flaking mill; T-R MonoRoll pellet mill; T-R Square Mixer and Ross experimental mill.

In attendance will be P. J. Montgomery, Henry H. Stark, R. O. Grundon and Don Whelpley.

NO. 29

Nor-Vell, Inc.

Nor-Vell will have a new booth with a number of photographs showing the various types of equipment which it manufactures, along with a complete assortment of brochures. In attendance will be: Mrs. W. E. Norvell, Wilber Fisher and Philip J. Wolters.

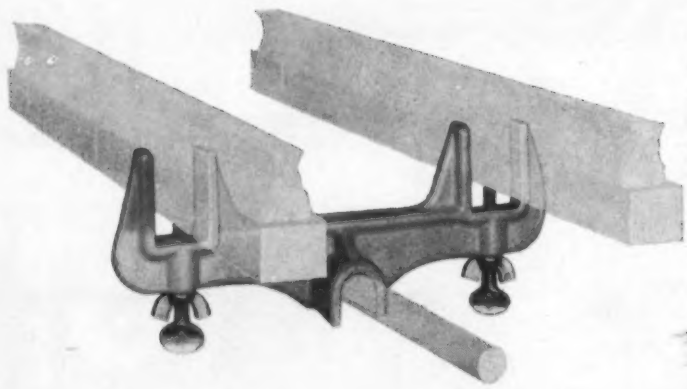
NO. 40

Great Western Manufacturing Co.

Great Western will be displaying for the first time its floor mounted sifter. This machine has extremely smooth operation, it is claimed, with no vibration whatsoever transmitted to the floor. It can be furnished with from 4 to 14 sieves; can be used for the screening of any dry materials,

HUSTLER

AUTOMATIC ROLL BRUSH HOLDERS



A favorite throughout the milling industry. Scientifically designed for 9" or 10" smooth or corrugated rolls. Completely sanitary — easily adjusted. Rolls stay clean and cool—brushes last longer. Only $8.50 per pair.

Write for information, specifications and prices on all Nor-Vell products. We will custom build to suit your requirements.

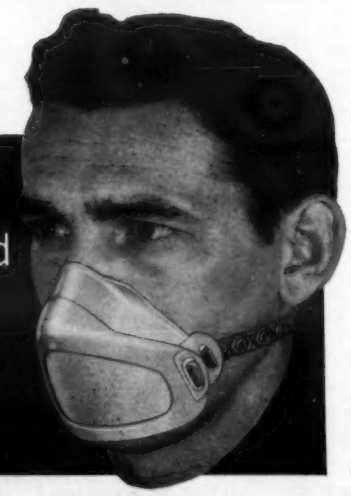
N NOR-VELL INC.
FORT SCOTT, KANSAS
The Name That Means Better Sifting

ROLL GRINDING
and CORRUGATING
Also NEW ROLLS for Sale
TWIN CITY MACHINE CO.
Minneapolis, Minn.

PAPER SACKS FOR MILLERS
The Chatfield & Woods Sack Co.
CINCINNATI, O.

FLEX-A-FOAM
DUST MASKS

Here's everything that management and worker alike could possibly want in a dust respirator!



1. Form-fitting design: Self-adjusting to any size and shape of face without pressure or irritating discomfort.
2. Attractive styling: Smartly designed to suit the most discriminating wearer.
3. Filtering efficiency: Filters non-toxic dusts 100 times smaller than the eye can see.
4. Easy-breathing comfort: Easier to breathe through and talk through than an ordinary pocket handkerchief.
5. Feather-like weight: Weighs only 1 ounce complete.
6. Simplicity and economy: Only 4 tough, long-wearing, interlocking parts — all washable. Pure latex filter outwears throw-away type more than 100 to 1.

Sample only $1.45 postpaid Industrial price only

No wonder FLEX-A-FOAM is the one dust respirator workers welcome and WEAR!

FLEX-A-FOAM DUST MASK®
FLEXO PRODUCTS, INC.
Westlake, Ohio

as a feed dresser or grader, and for rebolting flour before packers or bulk loading operation. It can make up to 8 separations if required. No reeds are used, the unit being suspended in a steel pipe frame, which merely sets on the floor.

NO. 44

Weighing & Control Components, Inc.

This booth will contain a demonstration unit using a standard operating model of an automatic batch weighing system utilizing the W-C pneumatic weight transmitter with actual control instrumentation "bread board" mounted for ease in viewing. Present for consultation on specific weighing applications will be J. C. Williams, Jr., general manager, and John Pink, sales manager.

NO. 67

Huntley Mfg. Co., Inc.

The Huntley exhibit will be in charge of Lester Johnson, direct factory representative, and will feature information on the latest Monitor grain processing equipment.

NO. 70

Hollywood Termite Control, Inc.

The company will exhibit its automatic tablet dispenser. In charge of the booth will be J. Wilfred Gunn and O. W. Morris.

NOS. 71, 72, 73

The Day Co.

The Day Co. will display its simplified "RJ" Dust Filter and a full size model of its new, patented Air-Swept High Pressure Feeder Valve for fluidizing and conveying flour, feed and similar products. Some outstanding features are the tangential material inlet and outlet and the patented "dual air inlets" (one at each end) which reduce the valve back pressure, increase volumetric efficiency and assure the best possible mixing of product and air.

NOS. 74, 75

Fuller Co.

Fuller plans to feature an animated four-color conveying sequence from unloading through process to loading. Illustrations will be used to show appropriate installations of pneumatic conveying and bulk transfer systems. In attendance will be: D. K. Banks, J. M. Sheehan, Jr., and W. J. Schmoyer, all of Catasauqua, Pa.; P. M. Klein and G. H. Healey, both of Chicago, and D. W. Armstrong of Kansas City.

NO. 80

Richardson Scale Co.

There will be a demonstration Select-O-Weigh panel complete with Richardson formula capsule, plus a capsule formulator for setting up each capsule independent of actual operation. This permits the operator or mill superintendent to set up each capsule for the necessary amounts of each ingredient according to a formula, and the plant operator then simply changes capsules and cannot alter these. In addition, the Richardson packing system will be shown visually by means of continuous-running motion picture film that will show flour packing at high speeds of 10 to 14 100-lb. paper bags a minute, 16 to 18 100-lb. cotton bags a minute, and 18 to 22 50-lb. cotton bags a minute; and also the Richardson bran packer with automatic bag ejector.

In attendance will be: W. L. Hamilton, vice president; Del Cremens, Chicago district manager; Harry Shaw, Wichita district manager; Malcolm McDermid, Minneapolis district manager; John A. Kenyon, St. Louis district manager, and John Robertson, service engineer.

General American Transportation Corp.

General American will exhibit its operating model Airslide car. To date, approximately 3,600 Airslide cars are in service principally for the milling and baking industries. Another 700 cars will be manufactured this year. A model cut-away hopper section of its new Dry-Flo car will also be shown. The Dry-Flo car is designed to handle products not susceptible to fluidization and is currently transporting malt, grains, feed ingredients, rice, pelletized plastics and other coarse dry commodities.

In attendance will be: John M. Gleason, assistant manager; LeRoy Kramer, Jr., Robert J. Perkins, Kenneth E. Rosene, Richard E. Francisco and Bernard J. Frisby.

Western Waterproofing Co., Inc.

This booth will contain information on proven methods of restoring structural defects in concrete grain elevators and mill buildings. This will also include the restoration and waterproofing exterior of concrete buildings, and methods of lining bulk flour storage bins.

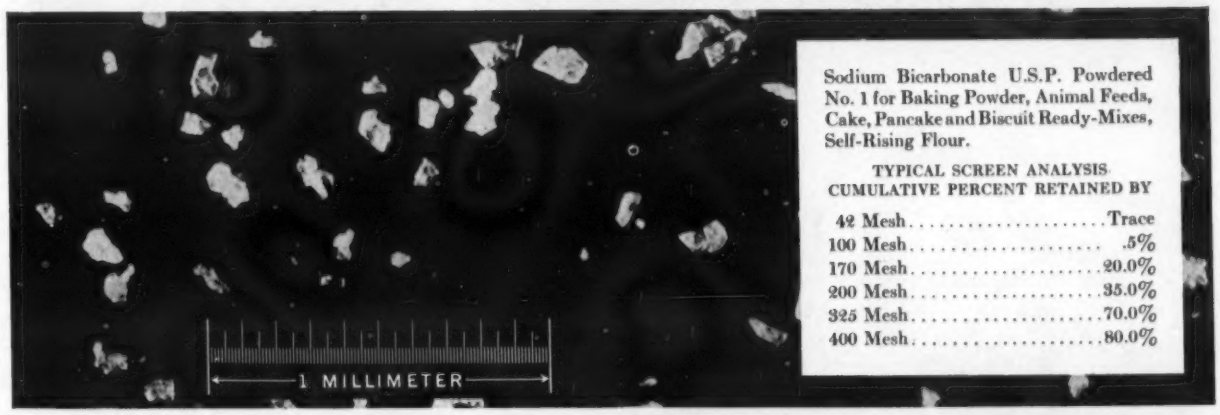
Entoleter, Inc.

Following is a list of the equipment which Entoleter will exhibit: Series 14 "Entoleter" ControMil with 30-h.p. vari-drive and 15-h.p. motor; Series 27 "Entoleter" infestation destroyer, adapted for pneumatic conveying systems to 15 p.s.i.; Automatic inlet shut-off valve assembly for Series 27 "Entoleter" infestation destroyer, and Series 250 "Cirlyptic" sifter.

Members of the firm who will be on hand at the booth are: R. J. Hoskins, G. B. Stearns, G. L. Smutny, C. A. Whatley, W. K. Maddern, E. J. Smith; E. J. Cecka, MMC Sales Corp., Buffalo; O. J. Zimmerman and R. W.

Get Sodium Bicarbonate in the grain size you need every time...

FROM CHURCH & DWIGHT



Sodium Bicarbonate U.S.P. Powdered No. 1 for Baking Powder, Animal Feeds, Cake, Pancake and Biscuit Ready-Mixes, Self-Rising Flour.

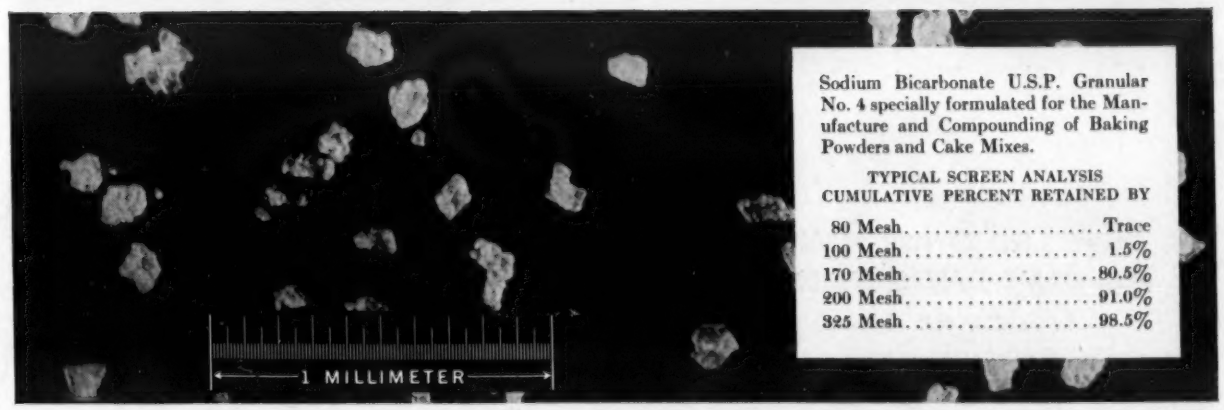
TYPICAL SCREEN ANALYSIS
CUMULATIVE PERCENT RETAINED BY

42 Mesh	Trace
100 Mesh	.5%
170 Mesh	20.0%
200 Mesh	35.0%
325 Mesh	70.0%
400 Mesh	80.0%

Sodium Bicarbonate Treated Free-Flowing (U.S.P. Powdered No. 1 blended with approximately 4% Tri-calcium Phosphate) for Self-Rising Flours and Cake Mixes.

TYPICAL SCREEN ANALYSIS
CUMULATIVE PERCENT RETAINED BY

42 Mesh	Trace
100 Mesh	.5%
170 Mesh	20.0%
200 Mesh	35.0%
325 Mesh	70.0%
400 Mesh	80.0%



Sodium Bicarbonate U.S.P. Granular No. 4 specially formulated for the Manufacture and Compounding of Baking Powders and Cake Mixes.

TYPICAL SCREEN ANALYSIS
CUMULATIVE PERCENT RETAINED BY

80 Mesh	Trace
100 Mesh	1.5%
170 Mesh	80.5%
200 Mesh	91.0%
325 Mesh	98.5%

Don't jeopardize the shelf life or performance of your Baking Powder, Self-Rising Flour or Cake Mix with an inappropriate granulation of Sodium Bicarbonate. Insist on Church & Dwight. You'll get the widest selection of grain sizes because Church & Dwight is the country's largest supplier of Sodium Bicarbonate U.S.P. You'll also get unmatched technical service based on more than 100 years of experience in formulating Sodium Bicarbonate. Unusual grain size requirements given special attention. Try us and see.

CHURCH & DWIGHT CO., INC., 70 PINE STREET, NEW YORK 5, N.Y.

Pearson, Smico-Sales, and F. J. Shidler and W. J. Ball, SMICO, Inc.

K. I. Willis Corp.

K. I. Willis will have a complete display line of Superior elevator buckets to operate in all kinds of centrifugal discharge elevators, and that handle all types of grains, flours, feeds and other processed materials. Of particular interest is the new innovation of all-aluminum cups for the handling of flour. These all-aluminum cups are completely new to the trade, and should be viewed, particularly by the flour millers. Also, all the various perfected perforations for the handling of flour, soft stocks, all types of feed, and dry, fluffy materials are on display.

The booth will be attended by LeRoy P. Krueger, president.

George A. Rolfes Cos.

Rolfes' electronics engineering research staff has just devised and approved final design for the new Rolfes "Bin Level-Trol." This new electronic device will be the main object of the display. This new electronic device will make it possible for milling houses to keep a constant inventory of their bulk flour bins. The Rolfes "Bin Level-Trol" will prevent overflow or low level capacities by automatically loading and unloading of all bins. This is accomplished by setting "high-low" presets on the console. In addition to controlling bin inventories, the Bin Level-Trol will also indicate within 1% the exact amount of any bin, it is claimed.

George Rolfes, president of the Rolfes companies, who also manufacture and install aeration and electronic temperature scanning systems, will attend the conference, along with several Rolfes engineers.

Ferguson Fumigants, Inc.

Ferguson will depict "What's New" in fumigation in its larger, 25-ft. booth. On display will be: The New Dawson bulk fumigant applicator for applying Dawson 37 fumigant without the use of cylinders in mill, warehouse and recirculation grain fumigation. The new "Fumilator" portable recirculator that quickly adapts any grain bin equipped with aeration to the more effective recirculation fumigation method; the most recent model of the "Little Squirt" applicator for applying Dawson 73 low dosage spot fumigant. New labels, new products, and the new line of Dawson Concentrated Insecticides will be presented. The theme of the exhibit will be "How to Get the Best Fumigation Results With the Least Cost and Human Effort."

Simon-Carter Co.

The firm will have on exhibit scale models of a cleaning house and flour mill, in addition to commercial models of the Simon Washer, stoner and whizzer and a Carter Duo-Aspirator, plus a laboratory demonstration unit illustrating the function of sonic valves in a positive pressure pneumatic conveying system.

The following personnel will be in attendance: M. L. Olson, Dan Strachan, Donald Deane, E. O. Anderson, R. K. Barnes, Dennis Gilbert and Gerald Griffin.

MIAG NORTHAMERICA, Inc.

MIAG plans a large display, featuring a double roller mill, a pneumatic grain cleaning station and the new MIAG strato impact mill. Additionally, it will have several smaller items on display such as two-way diverter valves for pneumatic handling systems, and parts of the MIAG pre-fabricated spouting system.

Part of the foregoing equipment will be shipped to Kansas State University, Manhattan, following the conference, as the firm's contribution for rebuilding the experimental flour mill for the Department of Flour and Feed Milling Industries.

MIAG will have in attendance: Dr. H. Gehle, technical director of MIAG's general office in Germany; Guenter Zimmer, Wolf Schnasse, Hans Koch and Ernst Auer.

Industrial Processes, Inc.

The exhibit will consist of:

1. An IPI Dry-Flow Meter device for measuring the rate of flow of dry material in unit weight per unit time. This will be an operating exhibit. The material will be continuously fed by a Screw Conveyor Corp. screw lift;

2. An EIMCO vacuum filter which is used as a principal component of the IPI recovery system. This will also be a stationary exhibit.

In attendance will be: Frank Of-

KEEP YOUR ELEVATOR DRY

CHECK CONCRETE DECAY

Excessive moisture causes concrete decay. Western Waterproofing Company checks water penetration at its source. That's why leading elevator and processing plant owners specify Western for:

• CONCRETE RESTORATION • PRESSURE APPLICATION OF CONCRETE
• MORTAR JOINT REPLACEMENT • PUTTING JOINTS IN MOVEMENT
(No Materials For Sale)

Preventive maintenance pays. Write for folder "Maintenance and Restoration of Concrete Storage Tanks."

WESTERN WATERPROOFING CO.
A Missouri Corporation And its Affiliate
RESTORATION COMPANY
1223 Syndicate Trust Bldg. • St. Louis 1, Missouri
NATIONWIDE SERVICE

MILL COGS
We make ALL kinds. Specialize in "Ready Dressed" cogs which are READY TO RUN the moment driven and keyed. Write for circular "DW" and instruction sheets free.
The N. P. Bowsher Co., South Bend, Ind.

A. E. BAXTER ENGINEERING CO.
Designers and Engineers for Mills, Elevators and Feed Mills
1310 GENESEE BUILDING BUFFALO 2, NEW YORK

LET DOTY DO IT
If Your Lab Is Overloaded
Sanitation Analyses - Wheat and Flour
Doty Technical Laboratories
P. O. Box 7474
North Kansas City 16, Mo.

Faster Service For Mill and Elevator With
"WILLIAMS WAY SERVICE"

THESE AND OTHER ITEMS IN STOCK FOR SAME DAY SHIPMENT
- ☐ Swiss Silk and Nitex Bolting Cloth
- ☐ Tyler Wire Cloth
- ☐ "Bind-o" Edging for Wire Cloth
- ☐ Nylon Sifter Tubes
- ☐ "Williams Way" Sifter Brushes and
- ☐ Rubber Ball Cloth Cleaner
- ☐ Graton & Knight Nycor and Leather Belting

PHONE OR WRITE

Representing
SIMON-CARTER CO.
PRATER PULVERIZER CO.

Mill Supply Specialists Since 1905

H. R. WILLIAMS MILL SUPPLY CO.
1320 MAIN ST. Phone Victor 2-3232 KANSAS CITY, MO.

ner, J. T. Stranix, Robert Planansky, and Georoge Slajchert of EIMCO.

Kice Metal Products Co.

Booth space will be attended by Russell Kice and Jack Kice, who intend to feature complete pneumatic conveying systems. In one booth they will display a suction type system powered by a Kice multi-blower and next to it will be a pressure system powered by the latest in positive displacement air pumps. There also will be a display of Kice Speed Spout—a complete system of prefab tube fittings and ells for gravity spouting—along with sweep ells and fittings for pneumatic conveying systems.

Victor Balata & Textile Belting Co.

Victor Balata participated in the first AOM conference exhibit, and has been represented continuously ever since. This being the firm's 50th year, it intends to emphasize its progress over that half-century.

Samples of the following will be displayed: Workwell sifter brushes, sifter brush roll stock belting; Flexmore Balata sleve lining, Victor pan cleaners; Easton solid woven white cotton belting; palmetto close woven cotton belting; Victor Balata belting; ampere canvas stitched belting; Lehigh neoprene impregnated vulcanized canvas stitched belting; Victor incline conveyor belting; Roh white sanitary Hycar covered belting, and three of its styles of neoprene belting in black and white combinations or single colors.

In attendance will be: Richard Vollrath, president; L. G. Heath, vice president; C. S. Nichols, S. R. Potter and R. Hartung, sales representatives.

Allis-Chalmers Mfg. Co.

A feature of the Allis-Chalmers display will be its all-metal, double-deck purifier. The purifier's design provides for maximum cleanliness and capacity, lower operating air consumption, greater flow flexibility and, because of fewer moving parts, less maintenance. Allis-Chalmers will also show units in its complete line of electric motors and control equipment.

Buhler Mill Engineering Co.

Buhler plans to show the following: (1) A four-roller mill, model MDDC, with all optionals. On this mill will be demonstrated the time saving and simplicity of removing rolls with the recently developed divided roller bearing housings; (2) a new laboratory vacuum conditioner, model MLU-404, which provides information the miller needs to properly and efficiently operate the vacuum conditioner in the mill; (3) model (cross-section) through Buhler plansifter showing the sieve and scheme arrangement, and (4) some standard equipment used in connection with pneumatic conveying systems.

Attending will be C. R. Moor, executive vice president; Fritz Schiess, technical sales manager, and field sales engineers Al Horst, Emil Kliebenschaedel and Walter Eichele.

Hegman, Inc.

Hegman will have on hand its new Udy protein analyzer. In charge of the booth will be Dr. Doyle Udy, Marshall Carpenter and Raymond Michel.

SMICO, Inc.

SMICO is planning on exhibiting one SMICO Delux 2x14 free swinging sifter, a new design SMICO wheat washer, and one high double agitator. The units are to be donated by SMICO to K-State. Also, there will be a SMICO santare sifter, two-way splitters, and other models of equipment on display.

Frank J. Shidler, president of SMICO, Inc.; Max Masel, sales and expediter; Bill Wyatt and Bill Taylor of the engineering staff; O. J. Zimmerman, president of SMICO Sales Co., Minneapolis; Charles Veeck and Raymond Sturdy of SMICO Sales, and Thomas Cook of Cook & Cook Co., Ed Cecka of MMC Sales, and Sky Palmer of Empire Equipment will be attending the conference to represent SMICO.

The W. S. Tyler Co.

On display will be wire cloth in all meshes and metals, including stainless steel bolting cloth, Dur-Loy free bolting cloth, and tinned mill screen for all types of sifters and purifiers. W. S. Tyler will display also the Ro-Tap sieve shaker for laboratory analysis. The booth will be manned by: V. A. Kaufmann, Jerry King and Walter C. Mahlig.

A. O. Smith Corp.

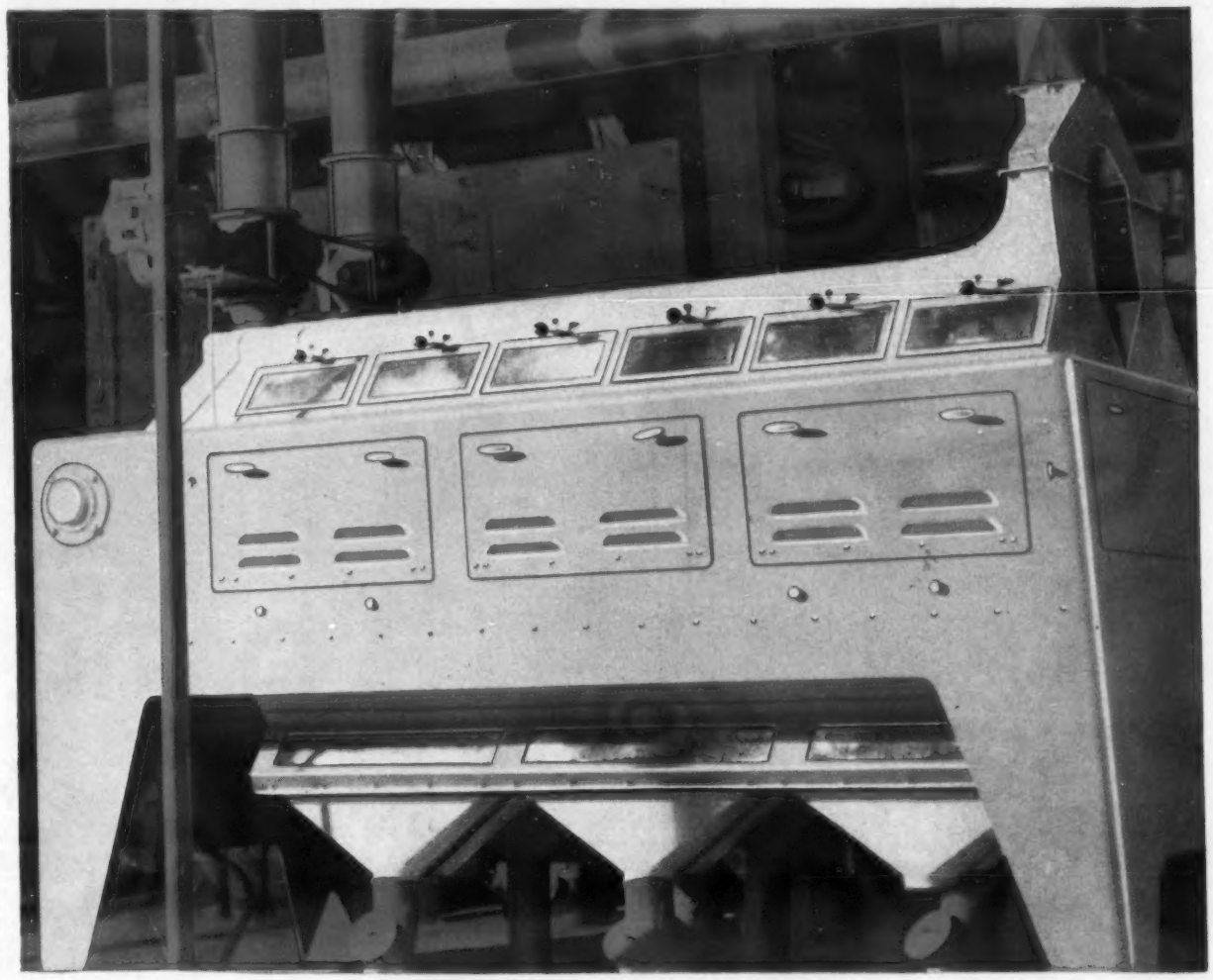
The A. O. Smith exhibit will show the advantages of Permaglas mechanized storage for handling and storing bulk materials. Available with mechanical sweep-arm, bottom unloader or cone bottom, it effects savings in manpower, maintenance costs and indoor storage space requirements. It helps make possible a completely enclosed conveying system minimizing infestation and contamination problems. A one-tenth size scale model will show the principle of the sweep-arm unloader. Clifford Sell, Permaglas industrial sales manager, and J. B. Hilderbrand will be in attendance.

C. W. Brabender Instruments, Inc.

The two principal items that this firm will have on exhibit are the Quadruplex pilot mill and the Labo-Fix wheat cleaner. In addition it will

(Turn to **EXHIBITS**, page 13a)

ALLIS-CHALMERS



New, all-metal, twin-deck Model 4072 purifier

new efficiency and sanitation standards

Increased sanitation. Clean-line design is the reason. The new A-C Model 4072 purifier features all-metal construction with receding contours — provides maximum protection from infestation. Sealed-leg design makes floor cleaning around the purifier fast and easy. All purifier parts are easily accessible for cleaning and inspection.

Increased efficiency. Twin decks give twice as much screening area. Each deck is sectionalized — each section has its own air control. Air blankets the entire cloth area giving maximum separation efficiency.

Other features of the new Allis-Chalmers Model 4072 purifier practically eliminate maintenance. Unit has only one drive shaft and six bearings. Rubber bushings on sieve-supporting arms never need lubrication. Identical weight of twin decks eliminates the need for balancing mechanism. Feeder pan operates without separate drive. Material moves through the purifier without mechanical aid. Removable sieve sections permit cloth changes without interrupting machine operation.

• • •

Ask your A-C representative about the new purifier. Or write **Allis-Chalmers,** Industrial Equipment Division, Milwaukee 1, Wisconsin. A-1324

See the new A-C Model 4072 purifier in action. Visit booths 78 and 81 at the AOM show.

Ferguson Fumigants "Squirt" Plan Gives You

CONTINUOUS INFESTATION CONTROL

At the Lowest Possible Cost

- Scheduled visits to your mill by Ferguson Fumigants Technician.
- Regular Insect Population Counts.
- Nominal Rental Plan. No initial cost for you.
- Continuous Service, Maintenance, Repair.
- Superior DAWSON® LOW DOSAGE FORMULA 73 SPOT FUMIGANT used exclusively.
- Minimum Shutdown — Minimum Exposure Periods. Two men in two hours can completely spot fumigate the average 4,000 cwt. capacity mill.

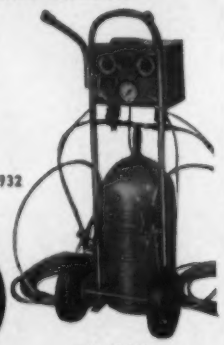
If you have NO FREIGHT ELEVATOR

"LITTLE SQUIRT"® BOX
U.S. Patent No. 2,876,932

AUTOMATICALLY MEASURES ACCURATE DOSAGE

If you have a FREIGHT ELEVATOR

"THE LITTLE SQUIRT"® Electric Portable
U.S. Pat. No. 2,876,932



DAWSON LOW-DOSAGE FUMIGANTS

DAWSON is a registered TM

SAFE—Low dosage. Strong Warning Odor.

SURE—Effectively kills all stages of insect life.

ECONOMICAL—Two fl. oz. does the job of nearly 1 qt. old type fumigant.

PACKAGED in 5 gal. cans and the handy 2 in. SHOT CAN for SMALLER MILL usage.

YOUR ASSURANCE

Economical, effective, trouble-free spot fumigation is assured by our national reputation. We are the original developer of Dawson 73 Low Dosage Spot Fumigant (U.S. Patent No. 2,806,857). We serve a large percentage of the milling capacity in America today. Their own experience with our materials is a further assurance. Inquiries invited. We are a trained, experienced service organization dedicated to helping you get the best results at the most economical cost.

Call or Write Dept. "S" for Complete Information

FERGUSON FUMIGANTS
INCORPORATED
P. O. Box 5868
Ferguson 21, Mo. Phone PErshing 1-0414

MEASURING

(Continued from page 1a)

classified into a size group, and the number of particles in each classification is tabulated.

Microscopic Methods

In microscopic methods the counting and sizing is done visually with the aid of an ocular micrometer, a photomicrograph, or a microprojection. Microscopic methods require a good deal of skill in dispersing and mounting a representative sample and several hours of tedious attention for each analysis. Probably more often than not, microscopic investigation is merely casual to visually portray the distribution of sizes and shapes of particles and to supplement other methods.

The tedium of visual counting can be alleviated and the time per determination shortened to about 15 min. by the use of photoelectric instruments which scan the microscope slide with an intense light spot or move the slide across a slit of light and automatically count pulsations from a photomultiplier.

The Coulter Counter affords another method of automatically counting particles by size. A suspension of particles in a conductive fluid is forced to flow through an orifice with electrodes immersed on either side. A particle passing through the orifice causes a change in resistance which is proportional to the volume of the particle. Size distribution data is obtained by successive counts of pulsations larger than preset threshold sizes.

The processing of data from automatic counting methods is somewhat complicated and the cost of the equipment is comparatively high.

The second category of methods is that in which the weight or volume of particles in various size ranges is determined. Size classification is made by the rate of fall of particles in a fluid. Particles suspended in a fluid will fall at a velocity directly proportional to the square of the diameter as defined by Stokes Law. This knowledge of the fluid dynamic properties of particles is used in many ways to obtain particle size information.

Fig. 1 charts the depth of flour particles which have fallen from the top of a column of benzene plotted against time on a logarithmic scale. If the particles are settling from a uniform slurry, the chart indicates the coarsest particles present at various depths and times.

Size distribution data is obtained from sedimentation techniques by:

1. Measurement of the weight or volume of particles settling at the bottom of a column at various time intervals.

2. Measurement of the weight or volume of particles washed over or elutriated with fluid rising at each of several known rates of speed.

3. Measurement of changes in concentration at intermediate levels: a.) by withdrawing known volumes of fluid from a level and weighing the particles; b.) by density measurements with hydrometers, divers, or manometers, and c.) by measuring changes in light transmission or other optical properties related to the concentration of particles.

Most liquid sedimentation methods require from 3 to 24 hr., depending upon the size of particles, the fluid used and the depth of measurements. Use of air as the fluid reduces the time required. Controlled centrifuging of the suspension also decreases the time required for analysis. For example, the dotted lines on the chart of sedimentation rates indicate the increased rate of fall of the 20, 10, 5 and 2 micron particles when centrifuged at 300, 300, 600, and then 1200 rpm for the times required to bring each of the respective particle sizes to the settled column of particles in a 10 cm. deep sedimentation tube. Thus, particles which would have required 13 hr. to fall 10 cm. in gravity are settled in less than 20 min. This is the principle of operation of the Mine Safety Appliance particle size analyzer.

Presenting Data

Because methods in the next category give only the surface mean diameter of the particles, without information regarding the distribution of sizes, it might be well to indicate here some of the methods of presenting the data when a size distribution is obtained as in the first two categories of methods. Generally a tabulation is made indicating the percent of the total number, weight, or volume of particles found in each of the size classifications. Further manipulation of data is sometimes made so that the distribution is represented by 2 or 3 parameters such as an average size, range, and a measure

J. L. Croteau

ABOUT THE AUTHOR—Mr. Croteau has been working in quality control with the Pillsbury Co., Minneapolis, since 1952. His prior experience has been in the fields of pharmaceutical chemistry and data processing. He obtained his B.S. degree from the College of St. Thomas, St. Paul, in 1948.

Quality Satisfaction Service

Are Synonymous with

SHUTTLE BRAND

SILK

NYLON

Registered Trade Mark

Manufactured for more than a century by

TRIPETTE & RENAUD
Sailly-Saillisel and Paris (France)

Sole Importers for U.S.A. and Canada

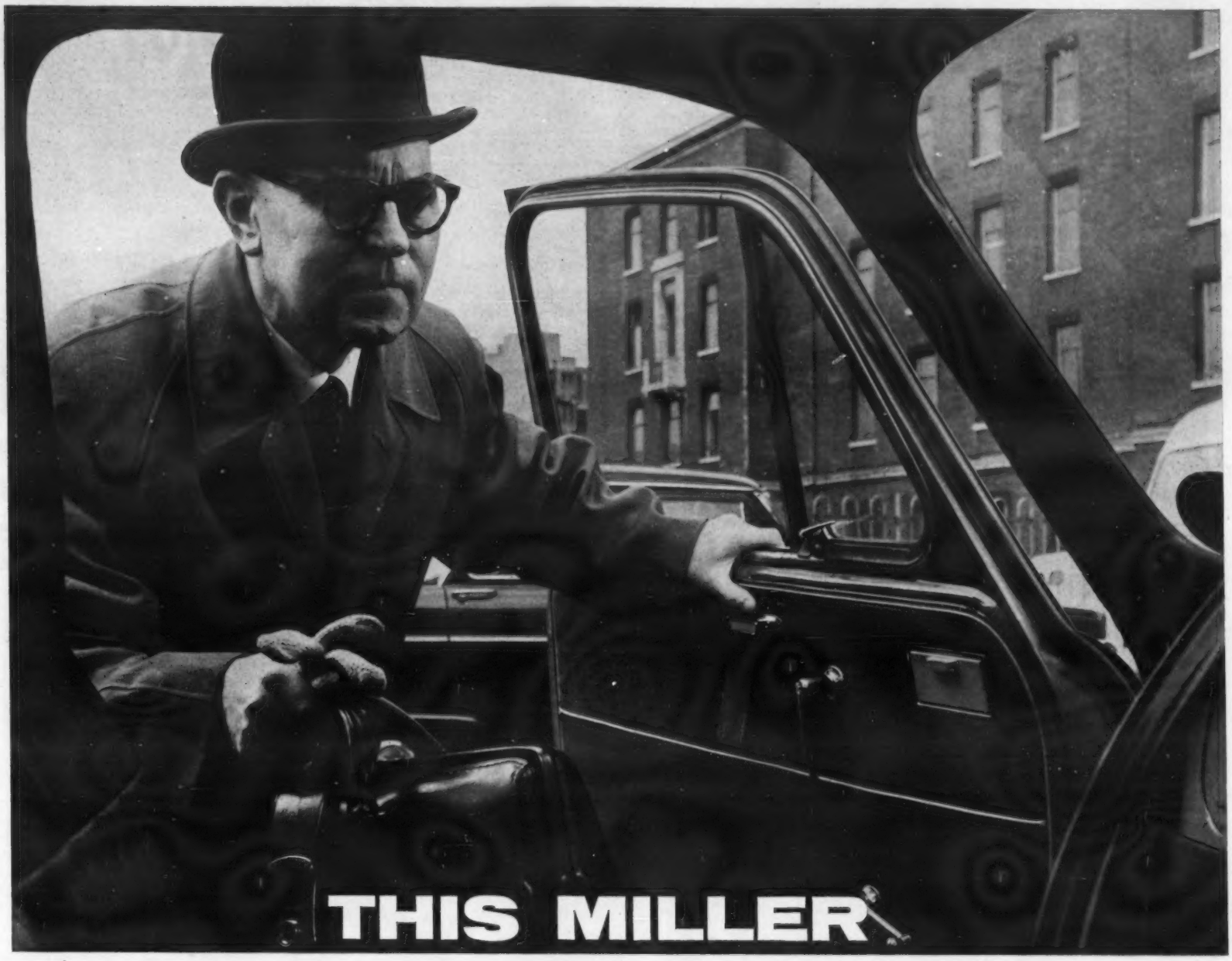
F. H. PAUL & STEIN BROS. INC.
235 Fifth Avenue New York 16, N.Y.
Phone: MU 4 (Murray Hill) 6370

Distributors

J. K. Howie Co.
Minneapolis, Minn.

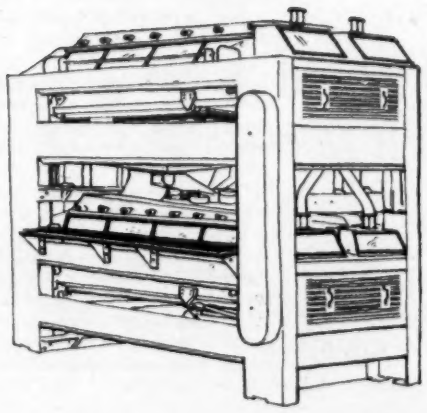
Capital Corrugating Co.
N. Kansas City, Mo.

M.M.C. Sales Corp.
Hamburg, N.Y.; Dover, Ohio



THIS MILLER HAS PROBLEMS

but he's on the way to solving them



Here's one of the many Robinson space and cost saving machines—a double-bank version of the Mark IV All-Metal Purifier, type PHm. The Robinson Purifier has a unique tail sheet aspiration grid which compensates for thinning out of stock, and a centrally placed air duct directly over the sieves for uniform aspiration. This machine is the sturdiest and most efficient purifier on the market —mills throughout the world have proved it.

The miller is in a more fortunate position than many other businessmen, because he can take his problems to Robinsons. Robinsons are well known for the realism they bring to bear on problems like the remodel this man has in mind. Space is money, and the new Robinson machines make the most economic use of it. But Robinsons do not automatically replace old machines; they are abandoned only when a new model is the more profitable alternative. If you are fighting to bring down costs in this highly competitive market, why not bring Robinsons in on your side?

Robinson

Mill-sense makes business sense

THOMAS ROBINSON AND SON LIMITED · ROCHDALE · ENGLAND

of normality or skewness of the distribution.

Graphical representations of the data are generally preferred over tabular listings because they are more readily grasped. Fig. 2 shows two of the common representations: A bar graph or histogram indicating the number of particles in each size classification and a size frequency curve indicating the probable relative frequency of very small size classifications after a very large number of observations. Arrows at the top of the chart indicate the location of some of the "average" sizes and statistical mean sizes which can be obtained from the data represented in the histogram and illustrate the importance of knowing what aspect of the size distribution is represented by a particular average diameter.

When two or more size distributions are to be compared, cumulative curves such as those in Fig. 3 are preferred. Here semi-logarithmic paper was used. Other special purpose graph papers are also available for charting the cumulative curves as straight lines when the size distribution conforms to certain mathematical definitions.

The third category of methods involves those methods in which the specific surface is determined. The surface of a known weight or volume of particles can be determined by:

1. Measuring the quantity of solute absorbed from solution as described by Harkins and Gans.

2. Measuring the quantity of gas absorbed at low temperature as described by Brunauer, Emmett and Teller.

3. Measuring the heat of immersion of a known quantity of particles coated with an absorbed film as described by Harkins and Jura.

To illustrate the effect of particle size on specific surface and on permeability, consider the two beds of packed spheres shown in enlarged cross section in Fig. 4 in which the weight and true volume of particles in each bed of equal dimensions are the same; the total volume of voids in the beds is also the same. However, the two beds vary considerably in permeability to fluid flow as well as in the amount of surface per unit volume—the smaller spheres having about six times the surface of the larger ones.

Equation Derived

Permeability of a bed of particles was related to the specific surface by Kozeny. He derived an equation which was tested over a wide range of conditions by Carman, who found good agreement with other methods of surface measurement.

Gooden and Smith in 1940 described an instrument to control the many variables in the Kozeny equation so that the surface mean diameter of a sample could be read directly from a manometric measurement of the pressure drop across the sample bed. This instrument is marketed as the Fisher Sub Sieve Sizer.

Operation of the calibrated instrument consists simply of packing a weighed sample tube in the holders. Air flows through the sample at a rate dependent upon the average particle size. After equilibrium is reached in one or two minutes the surface mean diameter can be read directly from the height of the manometer on the prepositioned calculator chart.

Fig. 5 shows a schematic diagram of the sub sieve sizer. Air is pumped into a pressure regulator which maintains a constant head of pressure. The air flows through a desiccant before flowing through the packed sample containing one cubic centimeter of solids and a void volume known from the measurement of the bed height. Pressure builds up behind the sample bed until equilibrium is reached when air flows through resistors as fast as it flows through the sample. Pressure behind the sample determines the mean surface diameter which is read directly from the chart positioned according to height of the packed sample bed.

Standard deviation of results on a single instrument is, in most cases, about 2% of the size measured. Although variations between instruments are considerably larger, they seem to be predictable. Of eight instruments collaborating in a recent series of tests, the instrument reporting the highest values reported most of its results in a range 5-10% larger than the mean. The instrument reporting lowest values reported most values 5-10% smaller than the mean. Six other instruments reported results closer to the mean.

Fig. 6 shows a plot of the surface mean diameters as measured by the Fisher Sub Sieve Sizer against the weight mean diameter obtained from Whitby centrifugal sedimentation measurements. The dots locate the mean sizes of blends of the indicated percentages of fine high protein fraction (lower left hand dot) in a coarse fraction of endosperm chunks (upper right hand dot).

The mean diameters obtained by surface measurements are generally smaller than those obtained by other methods of measurement. They would be expected to be equal to the mean diameter obtained by counting and sizing or by weighing and sizing methods (and the points would fall

(Turn to MEASURING, page 16a)

She's Planning Tomorrow's Lesson
Around Your Enriched Products

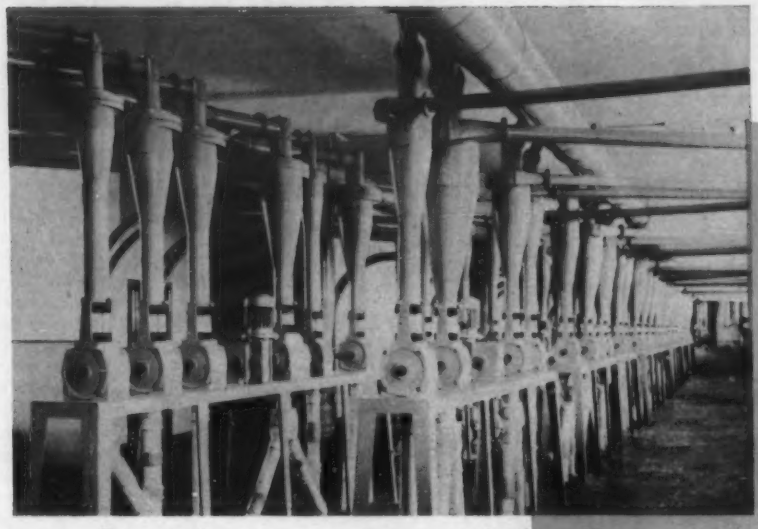
Merck Enrichment Teaching Kit
helps build sales for your products

This teacher is using an Enrichment Teaching Kit supplied by Merck. It stimulates her own interest in the contributions of enrichment—and helps her do a better job teaching good nutrition. The Kit consists of teacher's manual, colorful wall chart and student booklets which stress the importance of enriched flour, bakery and grain products in maintaining a balanced diet. Merck offers these Kits free of charge through ads in national teachers' magazines, has already sent hundreds of thousands to schools throughout the country. This Merck educational program works to your advantage by building increased consumer interest in the products that you enrich.

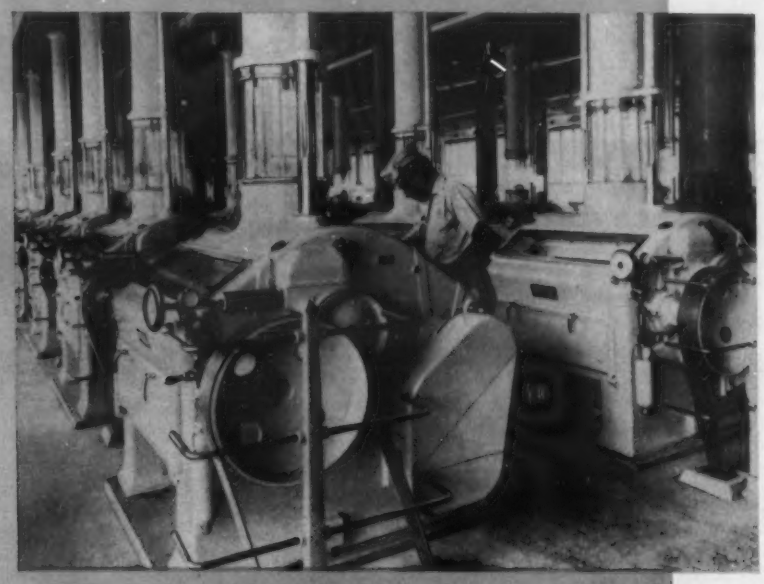
For Best Results Specify Merck

MERCK & CO., INC., Rahway, New Jersey

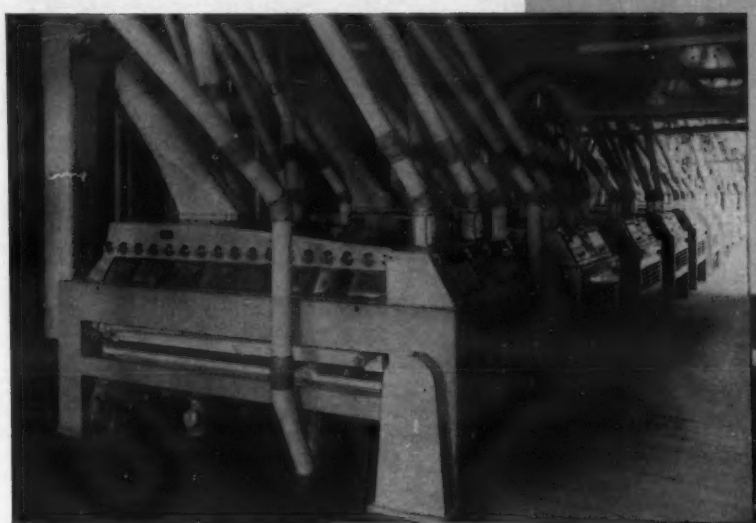
© Merck & Co., Inc.



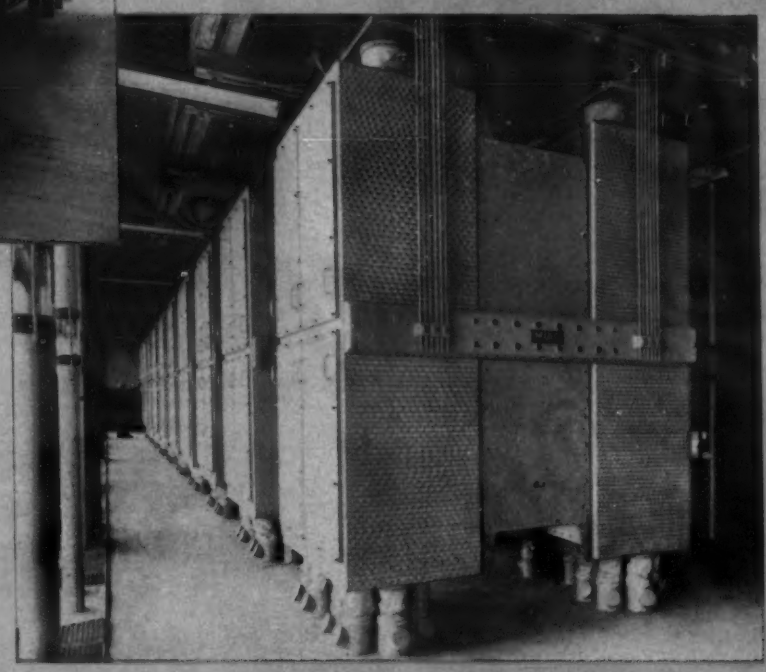
Pneumatic passage conveyance in the mill



Roller Mills mod. H. N. P. with Servo regulation and vertical direct-aspiration



Purifiers with double sieve deck



Plansifter with square sieve frames

MODERN DESIGNED, BUILT AND EQUIPPED INSTALLATIONS HAVE BEEN SUPPLIED BY US ALL OVER THE WORLD DURING THE PAST 50 YEARS GIVING CLEAR PROOF OF CONFIDENCE IN OUR WORK

Agents for

U. S. A.
MIAG NORTHAMERICA INC.
1616 SOUTH 8TH STREET
MINNEAPOLIS, MINN.

Canada
THE TRIMONT CORP. LTD.
P.O. BOX 25, STATION H
MONTREAL, CANADA

MIAG

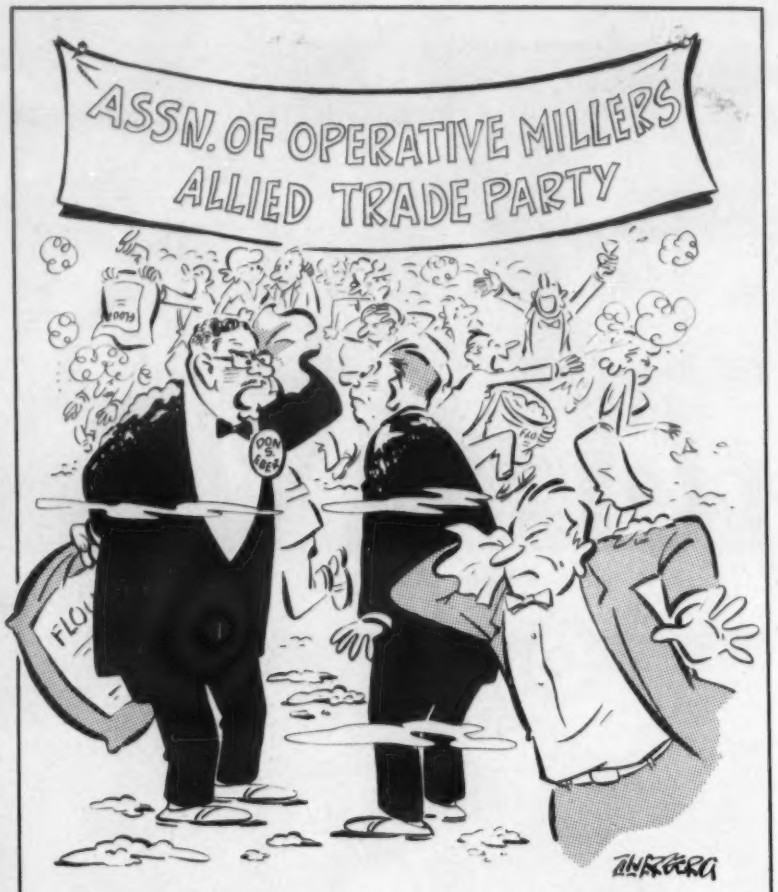
BRAUNSCHWEIG / Western Germany

Assistant to Nutrena President Appointed

MINNEAPOLIS — Appointment of David O. Wentzell as assistant to the president of Nutrena Mills, Inc., has been announced here by James C. North, president. The firm is the feed manufacturing and marketing subsidiary of Cargill, Inc.

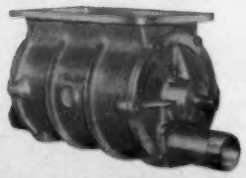
Mr. Wentzell, a grain merchant in Cargill and Nutrena organizations since 1945, will continue as executive supervisor of grain ingredient purchasing for Nutrena, in addition to the broader duties of his new post.

After completing a Cargill training program, Mr. Wentzell was assigned to the firm's Sioux City grain office. He moved in 1951 to Cargill's regional headquarters in Chicago and transferred to the company's executive office here in 1955. He became grain buyer here for Nutrena in 1957.


ASSN. OF OPERATIVE MILLERS
ALLIED TRADE PARTY
DON'T HOARD
"I UNERSTAND THIS WAS YOUR IDEA ARTZ- TO USE FLOUR INSTEAD OF CONFETTI!"

PRATER ROTARY FEEDER
Installations FOR DUST CONTROL, VOLUMETRIC FEEDING AND PNEUMATIC CONVEYING

Atkinson Milling Co.
Bay State Milling Co.
Dixie Portland Flour Mills
Econo-Flo Bulk Flour Service
General Foods
General Mills, Inc.
Huron Milling Company
Ideal Baking Company
Iglehart Bros.
International Milling Co.
King Milling Co.
Lewis Bros. Bakery
Ogilvie Flour Mills Co.
Pillsbury Company
Ralston Purina Co.
Richmond Baking Co.
St. Louis Flour Mills



Prater
Foremost Builder of Rotary Airlocks

WRITE FOR BULLETIN P-58
PRATER PULVERIZER COMPANY
1519 South 55th Court — Chicago 50, Illinois

Wash Wheat?
ELIMINATE SEWAGE PROBLEMS
with an
IPI RECOVERY SYSTEM

Sewage problems—and costs—caused by wheat washing can be eliminated *profitably,* by installing an IPI Recovery System. The B.O.D. requirement of the washer-waste water is automatically and drastically reduced . . . and, you can reduce total sewage volume by as much as 90% if you wish.

RECOVERS EXTRA PROFITS...SAVES WATER

An IPI Recovery System adds to your profits by automatically recovering wheat-washer solids (a valuable feed supplement). It can also reduce city water requirements by as much as 90%. Your mill can enjoy these extra profits. Full information is available from—

IPI Industrial Processes, Inc.
621 S. W. MORRISON • PORTLAND 5, OREGON

GRAIN HANDLERS ADVISED OF TRANSIT CHANGES

PORTLAND — Transit operators registered to handle grain and grain products at Southern Pacific Railroad stations in Oregon are reminded that on June 1, P.S.F.B. transit tariff 245-H will provide that transit settlement will be required not less than four times a year, at the end of March, June, September and December, instead of once each year on June 30, as is now the case. Carriers originally proposed to require monthly transit settlement, but the quarterly basis was finally conceded as a result of strong shipper opposition to the carrier proposal. Shippers, who met with the carrier representatives in San Francisco early in March, were also successful in getting greater clarification on several transit rules which have been the source of considerable uncertainty for many years. The quarterly cutoff rule will apply only on the Southern Pacific in Oregon, as tariffs affecting the other railroads in Oregon have not been charged—and are the same as apply in Washington and Idaho.

EXHIBITS

(Continued from page 7a)

have on exhibit the old standby, the Brabender rapid moisture tester.

B. F. Gump Co.

B. F. Gump Co. will display a No. 443M Bar-Nun rotary sifter, as recommended for giving flour a final, thorough scalp prior to packaging or shipping. The No. 443M being shown has a capacity of 35,000 lb. flour an hour; a larger model Bar-Nun will scalp 50,000 lb. an hour. Other Bar-Nun advantages include its dust-tight, all metal construction, and vibration-free operation.

Del Creighton and Barclay Spence expect to attend the conference for the firm.

Dow Chemical Co.

The display will consist of containers illustrating various Dow fumigants, both liquid and gas. These will not be actual cans, but merely wooden illustrations. There also will be a brief message on the advantages of Dow fumigants.

Fred Forsberg & Sons, Inc.

Forsberg will exhibit model machines showing some of the many different separations capable, such as stones from wheat, garlic from wheat, grit from farina, wheat germ from bran, and other separations possible on gravity separators. Also to be shown is the firm's high speed, positive action screener.

Representatives at the conference will be Arthur (Manny) Forsberg, Jr., William Carter of R. J. S. Carter Co.; Charles Veeck of Sycamore, Ill., and Thomas Vannerson of Arlington, Texas.

——BREAD IS THE STAFF OF LIFE——

BAG SHIPMENTS STEADY

WINNIPEG—Thirty-two manufacturers of cotton and jute bags in Canada in 1958 had shipments valued at $26,890,000, virtually unchanged from the preceding year's 34-plant total of $26,840,000. The industry employed 1,050 persons (1,104 in 1957), paid $3,084,000 in salaries and wages compared with $3,009,000 in 1957, and spent $20,968,000 for materials and supplies ($21,416,000 in 1957).

Wheat Supplies in Four Major Export Countries Same as Last Year

OTTAWA — Supplies of wheat remaining on or about March 1 in the four major wheat exporting countries for export or for carryover at the end of their respective crop years amounted to 2,378,200,000 bu., little changed from the year-earlier total of 2,383,800,000 bu. These figures were released by the Dominion Bureau of Statistics.

March 1 supplies were: U.S., 1,493,000,000 (1,438,200,000); Canada, 631,400,000 (677,600,000); Argentina, 102,400,000 (129,700,000), and Australia, 151,400,000 (138,300,000).

Total exports of wheat and wheat flour in terms of wheat from these four countries in the first seven months (August-February) of the current Canadian crop year were estimated at 527,700,000 bu., an increase of 2% over the corresponding year-earlier total of 516,600,000 bu.

Total exports in the seven-month period were larger from Canada and Australia, and were smaller from the U.S. and Argentina.

Totals were as follows, with year earlier figures in parentheses: U.S., 252,100,000 (254,500,000); Canada, 171,100,000 (165,900,000); Argentina, 30,800,000 (52,300,000), and Australia, 73,700,000 (43,900,000).

——BREAD IS THE STAFF OF LIFE——

GRAIN BLOCKS STREET

AMARILLO, TEXAS — A rupture in a flat grain storage bin of the Interstate Grain Co. here caused some 20,000 bu. to 25,000 bu. grain to spill onto a city street, blocking traffic for several hours.

Owens-Illinois, through years of experience, *thinks in packaging terms* in glass and plastic containers, corrugated boxes, closures and multiwall bags.

It pays to buy bags from a packaging specialist

PACKAGING EXPERIENCE assures you of the proper design of the multiwall bag to fit its specific uses, dependability of service to give you the right bag, when and where you need it, and, of course, the finest quality.

Owens-Illinois standards of service, quality control, and design are based on the needs for protection, safe transport, and convenient use of your product.

For the right multiwall bag for every packaging, handling, storage, and shipping method, call Owens-Illinois.

MULTIWALL BAGS
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

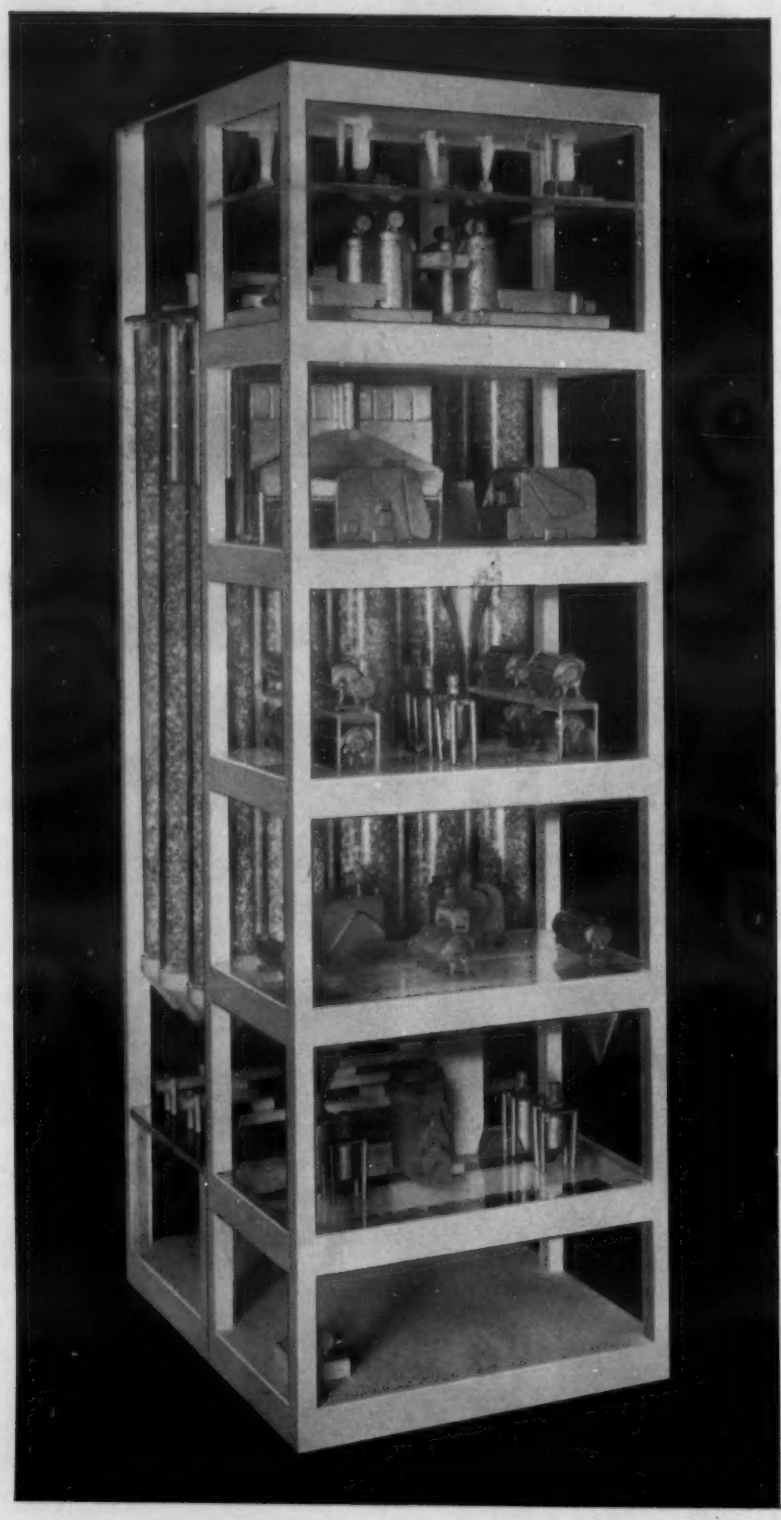
A New Method of Mill And Warehouse Fumigation

By Ray Millard and J. Carl Dawson

WHEN examining the history of fumigation in the flour milling industry, we find from time to time that new fumigants have been introduced, but little has been done to improve or change the method of application.

When general fumigations are performed, some fumigants have been distributed over the building by pouring them onto absorbent material and allowing them to evaporate. Some of the more volatile fumigants have simply been released by distributing heavy steel cylinders throughout all parts of the building, followed by the fumigator, wearing a gas mask, going through every room on every floor, opening valves on the cylinders and allowing the gas to escape and evaporate.

At the A.O.M. Convention ... SEE



A view of the "business end" of the mobile bulk fumigation unit, showing the polyethylene tube connections, valves, meters and regulator controls.

EDITOR'S NOTE: Mr. Millard is vice president and Mr. Dawson president of Ferguson Fumigants, Inc., Ferguson, Mo.

If such gas was the so-called heavier than air type, fans were necessary for thorough distribution and mixing with the air to assure complete kill at all points. Some fumigants have been introduced from cylinders through temporary hose and nozzle lines which are strung through the building, and lead out to relatively small sized cylinders which may be located on the outside of the building.

In the spring of 1959 Ferguson Fumigants, Inc., Ferguson, Mo., introduced bulk distribution and bulk application of their Dawson 37 fumigant (30% ethylene dibromide, 70% methyl bromide, by weight) for the recirculation fumigation of grain bins.

This permitted the distribution of the fumigant from the point of manufacture to the point of application without returnable cylinders being involved.

The fumigant is first transported to a centrally located storage tank, into which it is transferred from the tanks on the over-the-road, semi-truck trailers. From this centrally located storage tank it is transferred into a tank on an automobile trailer bulk fumigant applicator unit.

From the tank on the bulk applicator unit, the fumigant is transferred into the mill through a meter, a valve header and polyethylene tubes that lead through a window into each floor and is released through a "T" nozzle that has been securely located at a point near the ceiling.

The pressure of the fumigant flowing through these lines is constant and is maintained by a high capacity gasoline powered air compressor, which delivers air through a chemical air dryer and a pressure regulator adjustable to whatever pressure may be required to deliver the fumigant to the nozzles in the building with sufficient pressure behind it to give good fumigant distribution and quick evaporation.

Fumigation Performed

After the building has been sealed and the nozzles and lines are in place the fumigation is performed from outside the building in a comfortable, efficient and rapid manner without the need of a gas mask, by the simple manipulation of valves while reading a meter. The exact dosage requirement for each individual area and floor of the building is accurately delivered by controlling the amount of

(Turn to FUMIGATION, page 17a)

Mix with the Best...

Mathieson Bicarbonate of Soda

An ingredient in the finest products of the milling field for more than 60 years, Olin Mathieson bicarbonate of soda can always be relied on to maintain the highest standards of purity and consistent quality. Check your requirements against the following grades: U.S.P. Powdered and Granular; Miller's Special Regular and Miller's Special No. 2; and Fine. Available from Saltville, Va., and strategically-placed distributor stocks. For additional information and samples just write:

OLIN MATHIESON
CHEMICAL CORPORATION
Chemicals Division,
Baltimore 3, Md.

7358

In St. Louis:

What to Wear . . . . . Where to Eat

You are going to be there and, naturally, you want to know what the weather will be like—and your wife wants to know what sort of clothes to take to the AOM technical conference May 22-26.

As near as we can gather summer clothes will be in order. The men start wearing their thin summer suits come May 1, but our weather experts are noncommittal when we try to pin them down. Bob Artz, chairman of the allied trades committee and a Wallace & Tiernan man, who visits St. Louis regularly and ought to know, says that during the late part of May, St. Louis can be, either or both, very pleasant or very warm and humid. There is also a good chance of rain at that time of the year.

So we decided to get a second opinion and consulted Merck's Paul Weeke who lives and works in St. Louis. The Merck man agrees wholeheartedly with W & T.

Looking back at the records, we remember that during the 1955 conference in St. Louis the weather was warm and sometimes uncomfortable due to the high humidity, but there was no rain.

Mr. Artz and Mr. Weeke are also in agreement on another aspect of life in St. Louis—where to eat. The Tuesday of the conference provides a free evening so we asked both gentlemen to recommend some good places to eat.

For a good steak house Stan and Biggie's seems to rate tops. Stan is Stan Musial who, we are given to understand, is something of a baseball player and is to be seen at the restaurant of an evening, ever willing and eager to give autographs—so here lies a chance of a souvenir for the kids back home. Bob and Paul recommend Rueggeri's for steaks, too. And if you want seafood they are in agreement on the Nantucket and Edmonds.

The Frontier room at the Montclair Hotel, the Rathskellar at the Lennox and the Hofbrau at the Mayfair seem to find general favor with our two experts for food of a general nature.

And the Cardinals will be playing a double header on Sunday against Cincinnati. For the foreign visitors who read this, let us explain that the Cardinals are not birds, but a group of baseball players who have achieved some fame in the U.S. And in further explanation, if they are puzzled even more, baseball is a bit like rounders except it's played by men and not girls. (Mr. Artz and Mr. Weeke wish to disassociate themselves completely from this portion of the story.)

The Cardinals will also be playing night games against Milwaukee on Tuesday, Wednesday and Thursday. Wednesday is out because that's the night of the AOM's annual banquet, but Tuesday is free, if the wife will let you off. And Thursday's okay if the boss will let you stay away from the plant that long.

For the rest of the time in St. Louis the local committees have arranged a heavily stocked program—work for the men, visits for the ladies. It promises to be one of the most successful conferences ever and well worth a visit.—**GES.**

Canada Wheat Stocks Down from Year Ago

WINNIPEG—Visible stocks of Canadian wheat totaled 369,500,000 bu. at mid-April. While this was 2,200,000 bu. more than the previous week, the figure was 6,400,000 bu. less than the comparative total a year ago.

Lakehead receipts of wheat from Aug. 1, 1959, to April 13, 1960, amounted to 99,600,000 bu. compared with 89,300,000 bu. a year ago, according to latest figures released by the statistics branch of the Board of Grain Commissioners for Canada.

Accumulative wheat markets by producers to April 13 amounted to 192,700,000 bu. against 211,600,000 in the same period a year ago.

The latest visible supply figures showed 241,600,000 bu. in country elevators; 50,400,000 bu. in lakehead terminals; 32,400,000 bu. in eastern elevators; 12,400,000 bu. at Canadian Pacific coast ports, and 4,900,000 bu. at Churchill. The remainder was in transit by lake and rail.

TO TAKE LESS RED GRAIN

★

WASHINGTON—Finland will take less grain from the USSR in 1960 than in 1959. Under a Finnish-Soviet agreement of Dec. 22, 1959, covering exchange of goods during calendar 1960, Finland agreed to take 140,000 metric tons of Russian wheat, 50,000 tons of rye and 35,000 tons of corn. Under the exchange agreement for 1959 Finland agreed to take 235,000 tons of wheat, 100,000 tons of rye and 30,000 tons of corn.

For Mills, we recommend . . .

Talismanic

BELT DRESSINGS

Specialized for Your Industry

Belt Clinch No. 2 (liquid) and Bar Belt Dressing No. 3

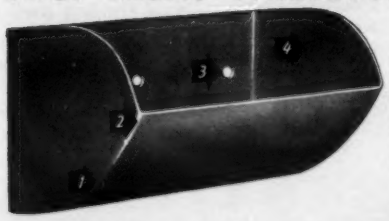
These dressings are preferred by 75% of our flour mill customers.

WRITE FOR GENEROUS SAMPLES

JOHN C. CHAMBERS CO.

1827 N. LeClaire Ave.
Chicago 39, Ill.

First Choice Wherever Grain is Handled



Your jobber has them, or write B. I. Weller Company, 327 South LaSalle Street, Chicago 4, Illinois.

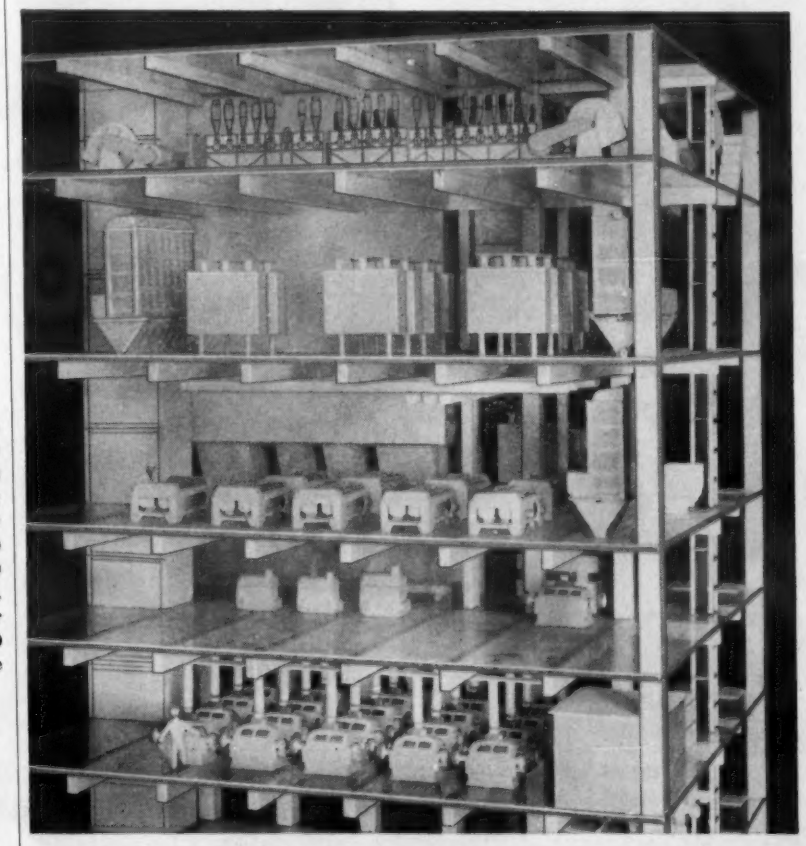
(1) The logarithmic curve design loads easier . . . dumps cleaner . . . permits high speeds.
(2) Scientifically formed lip aids in greater cup capacity.
(3) Bolt-hole placement gives better cup balance . . . saves belting.
(4) Hyperbolic sideboard ends permit greater load capacity without "slopping."

CALUMET CUPS

THESE MODELS

of typical SIMON-CARTER cleaning house and mill installations...

including pneumatic conveying.



Get full data at A.O.M. Convention or write to . . .

SIMON-CARTER CO.
673 19th Ave. N. E., Minneapolis 18, Minnesota

MEASURING

(Continued from page 10a)

on the dotted line of the graph) only if the samples were composed of uniform spheres. The difference between the various mean diameters is a function of the range of the size distribution and the shape of the particles.

That is, the diameter of the particles of average surface becomes more nearly equal to the diameter of the particle of average weight as the "range" of the size distribution becomes smaller and as the "shape" of the particles becomes more nearly spherical.

Of the various methods of measuring flour particle size reviewed here, many are excessive in time or operator skill required, which may often preclude their use as a quality control measure. The Fisher instrument, however, affords a rapid method of obtaining particle size information which, when subjected to interpretation in terms of the physical characteristics of the subject material, can be adequately correlated to other methods of size measurement.

Although a single value such as the surface mean diameter is not sufficiently informative for investigations where interest is in quantities within definite size ranges or in the characteristics of the size distribution, it adds another aspect of size to supplement data from other methods.

Also, this single value can be useful in preliminary appraisals of modern day mill products which generally have distribution characteristics well known to the control laboratory and can be verified when suspect by one of the other more costly and exacting methods. In other words, permeability measurements as obtained with the Fisher Sub Sieve Sizer can be, when properly interpreted, an effective tool for control of quality in the area of particle size.

v v

BIBLIOGRAPHY

1. J. M. Dallavalle—"Micromeritics," Pitman Publishers, Inc., Toronto, Can. (1948).
2. R. D. Cadle—"Particle Size Determination," Interscience Publishers, Inc., New York (1955).
3. British Journal of Applied Physics, Supplement No. 3, "The Physics of Particle Size Analysis," The Institute of Physics, London S. W. 1 (1954).
4. J. A. Shellenberger, et al—"Flour Granulation Studies," Kansas State College Technical Report, Manhattan, Kansas (April, 1950).
5. F. W. Wichser—Cereal Science Today, 3, 125 (1958).
6. D. P. Ames, R. R. Irani and C. F. Callis—Journal of Physical Chemistry, 63, 531 (1959).
7. P. Rosin, E. Rammler—J. Inst. Fuel, 7, 29 (1933).
8. W. D. Harkins and D. M. Gans—J. Am. Chem. Soc., 53, 2804 (1931).
9. S. Brunauer, P. H. Emmett and E. Teller, ibid—60, 309 (1938).
10. W. D. Harkins and G. Jura, ibid—66, 1366 (1944).
11. Gooden and Smith—Ind. and Eng. Chemistry Analytical Ed., 12, 479 (1944).
12. Coulter Industrial Sales Co., P. O. Box 22, Elmhurst, Ill., Bulletin A-2.
13. Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa., Bulletin 0708-1.

——BREAD IS THE STAFF OF LIFE——

Pakistan Agrees To Purchase Wheat From U.S. Supplies

SPOKANE, WASH. — An agreement providing for the purchase by the government of Pakistan of a million tons of American wheat and wheat products to be paid in Pakistani rupees was signed in Karachi recently, according to a report from the Washington Wheat Commission.

Signing for Pakistan was M. Shoib, finance minister, and the American ambassador, William M. Rountree, according to Ivan C. Packard, director of the Wheat Associates office in that country, and formerly executive secretary of the Washington Association of Wheat Growers.

According to Mr. Packard, this agreement is aimed at promoting balanced economic development, with particular emphasis on building up adequate food reserves.

"This reserve," Mr. Packard stated, "would assist the government of Pakistan in solving their food problems during the periods when there is a shortage of food grains. If there is a deficit area, wheat would be pulled from the reserve stocks and moved in under a de-controlling wheat policy starting from May 1, 1960."

The new agreement on wheat is an example of two countries working together for a common cause, to meet the distinct challenge that the under-developed world is facing, the Washington Wheat Commission report said.

The Wheat Associates office in Pakistan established last January represents the states of Oregon, Washington and Idaho through Western Wheat Associates, Portland, and the states of Nebraska, Kansas and Colorado in the name of The Great Plains Wheat Market Development Assn., Garden City, Kansas, in coaperation with the Foreign Agricultural Service of the U.S. Department of Agriculture.

——BREAD IS THE STAFF OF LIFE——

Secretary Resigns

STOCKTON, CAL. — At a regular meeting, the board of directors of the Stockton Grain Exchange accepted the resignation of Edwin Kauppila as secretary-manager.

Mr. Kauppila informed the board of his intentions to enter the grain business, but said he would stay on temporarily until a new manager could be found.

THE ORIGINAL ENRICHMENT CONCENTRATE.

MILLERS HAVE USED IT WITH COMPLETE CONFIDENCE AND SATISFACTION FOR MANY YEARS.

TODAY, THIS TRADITIONALLY FINE PRODUCT —**NOW IMPROVED** AND **BETTER-THAN-EVER**— CONTINUES TO WIN NEW ACCEPTANCE.

Here are five reasons why many processors think first of Pfizer BI-CAP when they think of flour enrichment concentrates: **1. EVEN DISPERSION**—The uniform-size particles flow readily and smoothly. **2. EXCELLENT STABILITY**—All forms of BI-CAP are made with thiamine mononitrate for better Vitamin B_1 stability. **3. TWO STRENGTHS**—Single and double strength are available, for feeding to either a fast or slow flour stream. **4. UNIFORM BULK**—BI-CAP is milled to minimum variation. **5. LIGHT COLOR**—BI-CAP is formulated with a new type of riboflavin which gives it a lighter color and overcomes unsightly riboflavin agglomeration.

■ The BI-CAP line includes: BI-CAP Flour Enrichment Mixtures—types AM (single strength) and CM (double strength), BI-CAP Bolted Cornmeal Enrichment, BI-CAP Whole Cornmeal Enrichment, BI-CAP Degerminated Cornmeal Enrichment, and BI-CAP Rice Enrichment. Write for full information about all Pfizer enrichment concentrates.

Science for the world's well-being

Quality Ingredients for the Food Industry for Over a Century

Pfizer

CHAS. PFIZER & CO., INC. CHEMICAL SALES DIVISION, 630 FLUSHING AVE., BROOKLYN 6, N. Y.
Branch Offices: Clifton, N. J.; Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.; Dallas, Tex.; Montreal, Canada

FUMIGATION

(Continued from page 14a)

fumigant flowing into the individual hose line leading to each individual area.

The bulk applicator method of fumigation offers many distinct advantages over older methods now commonly used. There are no cylinders to receive and distribute over the mill, open, and later gather up and return. There are no cylinder deposits. The problem of cylinder valves sticking is eliminated. Application nozzles and polyethylene lines are installed with much less labor than is required for handling cylinders, and while the mill is still operating — thus making it possible to apply the fumigant much sooner after the mill is shut down. This decreases valuable shutdown time.

The bulk applicator with meter permits metering of the exact dosage requirement for each area and room fumigated —thus eliminating under- and over-dosing of individual areas resulting from cylinder sizes not matching dosage requirements for such areas. Electric fans for mixing and distributing the gas are no longer required since release of the gas under high pressure near the ceiling adequately mixes and distributes the gas.

The bulk fumigant applicator carries an excess supply of gas beyond that required for performing the individual fumigation. The fumigator is therefore prepared to rebuild the concentration of gas in the building, should a sudden thunderstorm or other adverse weather conditions cause an excess loss of gas concentration beyond that normally anticipated.

Gas concentration in the building can be read from the outside by the use of the battery operated Fumiscope. When this problem is encountered in cylinder fumigation, if additional cylinders are available they must be carried into the building while it is under fumigation — which is a laborious and dangerous operation.

Bulk Applicator

The bulk fumigant applicator and the Dawson 37 fumigant mixture provide many safety features. Application is made in the open air from outside the building, without the necessity of wearing a gas mask. The fumigant has a strong and distinctive odor, obnoxious at fumigation concentrations — thus discouraging unauthorized entry into the building while the fumigation is in progress.

Effective Dosages

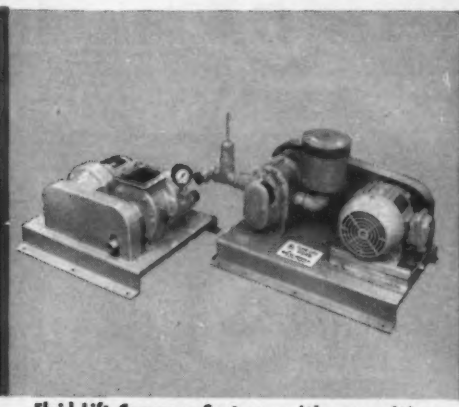
The mixture of 30% ethylene dibromide, 70% methyl bromide, by weight is effective at dosages 25% below that required for methyl bromide; thus reducing accordingly the inorganic bromide residue that may result in the processed food.

This bulk method of application of Dawson 37 fumigant is believed to have been used in the fumigation of more than 100 million bushels of grain in the 1959 season. It has proven to be equally as efficient and effective for mill and warehouse fumigation.

LOWER LIVING COSTS

WINNIPEG—The Canadian cost of living has deccreased for the fourth consecutive month due to lower food prices, the Dominion Bureau of Statistics reports. At March 1, the index stood at 126.9, compared to 127.2 in February. Last year, the index was 125.7 and 125.5 for February and March respectively.

Chain Conveyors are self-cleaning, need little power. Capacities up to 1000 tph.



Fluid Lift Conveyor Systems with capacities up to 200,000 pounds per hour. Solids-to-air ratios are as high as 250:1.

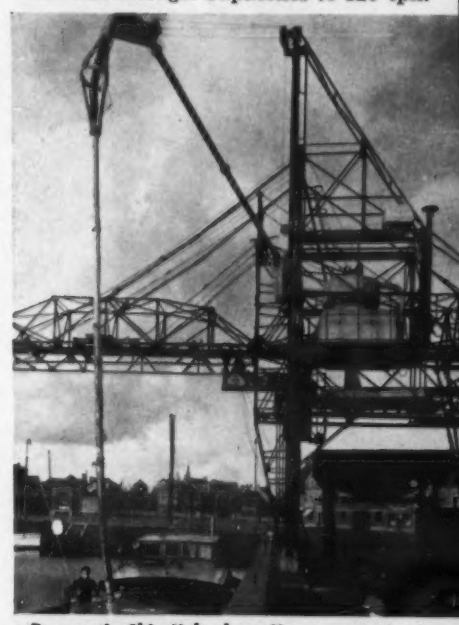
Portable Pneumatic Unloader for box cars and flat storage. Capacities to 120 tph.

Vibrating Conveyor Tubes require little power and are completely self-cleaning.

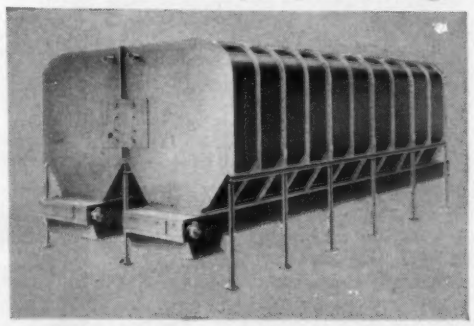
Efficient Materials Handling

Shown here is some of the modern BUHLER-designed and BUHLER-built equipment which is enabling mills and bakeries to handle their bulk materials more economically than ever before possible.

Your nearby factory-trained BUHLER Man will be glad to visit you and recommend the most efficient system for your needs. Service and delivery is prompt . . . and you will be pleased with the savings which result.



Pneumatic Ship Unloader offers great flexibility. Capacities up to 220 tph.



Horizontal Storage Bins (above) with **Bin Dischargers** (below) use series of chains for discharge. No bridging; self-cleaning. They are available in a wide variety of sizes to fit the space which you have.

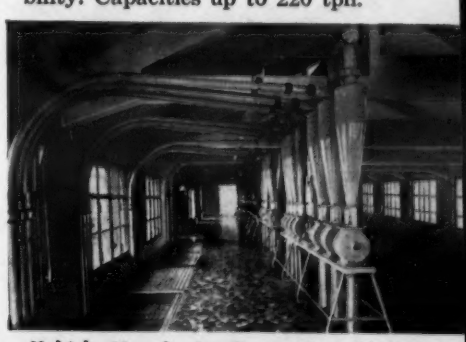
For more information on how
BUHLER Engineers
BUHLER Experience
BUHLER Equipment
can help you increase the efficiency of your mill, call or write . . .

BUHLER

MATERIALS HANDLING DIVISION
BUHLER MILL ENGINEERING COMPANY
4207 Nicollet Ave., Minneapolis 9, Minn.

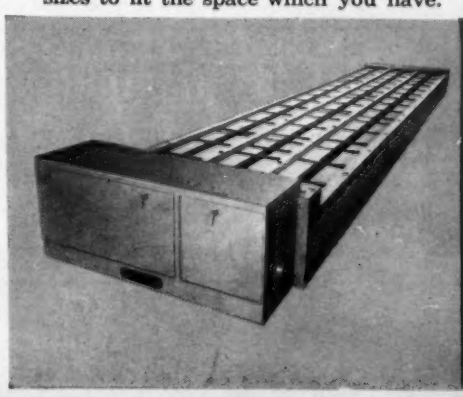
BUHLER BROTHERS (Canada) Limited
24 King Street West, Toronto 1, Ontario

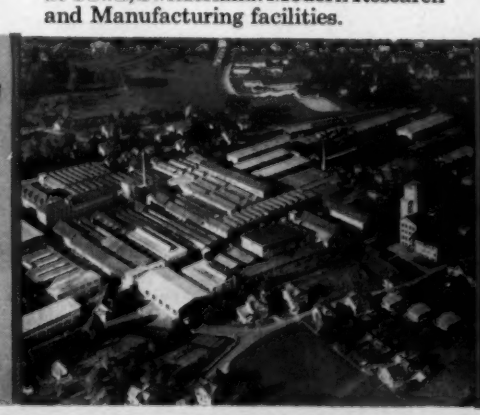
Home of Buhler Brothers Engineering Works at Uzwil, Switzerland. Modern Research and Manufacturing facilities.

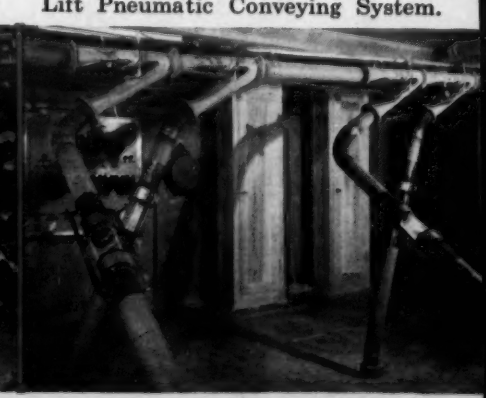


Multiple Line Suction Pneumatic. (Above) Low initial cost, sanitary, self-cleaning.

Line Switches with **Pneumatic Control Panel** regulate the flow of materials in Fluid Lift Pneumatic Conveying System.







Worth Looking Into

New Products
New Services
New Literature

This reader service department announces the development of new and improved products, new services and new literature offered by manufacturers and suppliers. Claims made in this department are those of the firm concerned. Use the accompanying coupon to obtain the desired information.

No. 2184—Indicators For Control

How material-level indicators accurately and automatically control level of pulverized, fine, crushed or granular material in bin or silo is the subject of a bulletin offered by Fuller Co. The general purpose model (SG-4) and a specially-designed model for hazardous dust conditions (SG-4X) are discussed. An explanation of the difference between the two models and their component parts is given, plus a detailed account of operation. Since either model can be used as a high or low level control, a description of performance at both levels is included. Current requirements, control switches and a safety pulse switch, which indicates that the entire mechanism is in working order. are also discussed. A wiring diagram illustrates the operation of the switches. The bulletin contains a full-page schematic drawing of a material-level indicator, a photograph of a typical installation of a vertical-mounted indicator and a drawing giving five examples of application. For copies of Bulletin I-5-C, check No. 2184 on the coupon, clip and mail to this publication.

No. 2186—Bulletin On Unloader

The availability of a revised bulletin describing the Portaflow, a portable pneumatic unloader for use with Airslide cars, has been announced by Sprout, Waldron & Co., Inc. Bulletin 126-B contains application and design data as well as a schematic drawing giving complete dimensions. The Portaflow unit is a standard assembly designed for attachment to Airslide cars to provide dustless, leak-proof efficient transfer of all types of dry, pulverized and granular materials. The unit is perfectly balanced for ease of handling and positioning, it is claimed. Included in the bulletin is a schematic drawing showing a typical arrangement of a complete system for car unloading, storage and transfer from storage to in-plant usage. Copies of Bulletin 126-B are available on request. Check No. 2186 on the coupon, clip and mail.

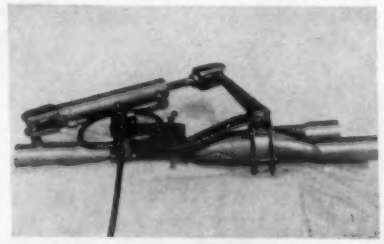
No. 2185—Permaglas Storage Bulletin

A 16-page, three-color bulletin, MU-107 "Permaglas Mechanized Bulk Storage System" contains specifications on Permaglas bulk storage structures (glass-fused-to-steel construction on the inside and out) with the exclusive mechanical sweep-arm bottom unloader which makes possible completely automatic systems for storing and conveying bulk materials into process. Three new Permaglas

products are also illustrated and described for the first time. They are: Permaglas cone bottom, glass-lined on the inside, with structural steel support; Permaglas Modular Storage Bin, glass-lined on the inside, with fluidized aeration unloading system; and small diameter Permaglas Bulk Storage Structure, glass-lined on the inside and out, with a cone bottom that is glass-lined on the inside. For a copy of Bulletin MU-107, check No. 2185 on the coupon, clip and mail.

No. 2187—Diverter Valve Available

Systems Engineering & Mfg. Co. has introduced the Semco Diverter Valve for simple, light and economical diversion of a pneumatic stream from one point to another by electrical impulse. The valve is plant air



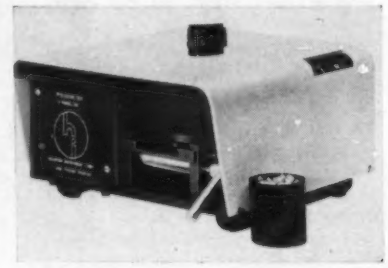
operated and controlled by a two-wire, four-way solenoid valve. Action of the valve is instantaneous. The seal is said to be perfect, and the equipment without sliding parts that require maintenance. For more information, check No. 2187 on the coupon, clip and mail to this publication.

No. 2188—Data On Sifting Equipment

A compilation of technical data, published by Entoleter, Inc., describes Cirlyptic sifting equipment for high through-put screening and size classification of chemicals, plastics, pharmaceuticals, and food products. Included in the data sheet are operating principles, dimensional data, typical sifting capacities for different screen sizes, and recommended uses of the Cirlyptic sifters. The Cirlyptic sifter is a unique high-capacity horizontal screening apparatus that operates without use of agitating materials (such as rubber balls) or external vibrators. The sifter features sanitary stainless steel construction, ease of installation, low space requirements, and operates with minimum screen stacking or blinding. For details check No. 2188 on the coupon, clip and mail.

No. 2189—Density Determination Device

Houston Instrument Corp. has a piece of equipment, its Air Comparison Pycnometer, improved Model 200, which it states can shorten accurate density determinations of solid materials to 1 min. For use in measurements of quality control, the company offers its machine to the grain, cereals and agricultural industries. It



has analytical and miscellaneous uses to determine true volume of irregular, powdered, porous fragmentary and fibrous materials. The Air Comparison Pycnometer requires no liquids, no gas pressure determination and no temperature control. It is claimed that an unskilled operator can make a complete measurement in 1 min. without wetting or damaging the sample. For details, check No. 2189 on the coupon, clip and mail.

Send me information on the items marked:

☐ No. 2184—Control	☐ No. 2191—Counter
☐ No. 2185—Bulletin	☐ No. 7852—Dust
☐ No. 2186—Unloader	☐ No. 7870—Fan
☐ No. 2187—Valve	☐ No. 7898—Batching
☐ No. 2188—Sifting	☐ No. 7921—Crust
☐ No. 2189—Device	☐ No. 9154—Cleaner
☐ No. 2190—Cleaner	☐ No. 9192—Blender

Others (list numbers) .....

NAME .....

COMPANY .....

ADDRESS .....

SLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS PERMIT No. 2
(Sec. 34.9, P. L. & R.)
MINNEAPOLIS, MINN.

BUSINESS REPLY ENVELOPE
No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

The Northwestern Miller
P. O. Box 67
Reader Service Dept. Minneapolis 40, Minn.

REMEMBER TO ORDER
CHASE BAGS
There's None Better!

CHECKERBOARD GRAIN COMPANY
MILLING WHEAT • COARSE GRAINS • MILLFEED
Hard and Soft Winter Wheat
CHICAGO • ST. LOUIS • KANSAS CITY • MINNEAPOLIS

No. 2190—Pneumatic Grain Cleaner

The Clute Corp. has introduced a pneumatic grain cleaner said to provide greater cleaning efficiency at low cost. The cleaner is a pneumatic system which operates by a combination of gravity and cyclonic air flow in a basic cleaning tube or leg. A fan powered by a motor is built into the top of the equipment and draws clean air in a spiral motion up through the leg. For details, check No. 2190 on the coupon, clip and mail to this publication.

No. 2191—Re-designed Batch Counter

Standard Instrument Corp. announces the re-design of its electronic batch counter, Tally-Count. In its present form, Tally-Count serves as a complete materials handling instrument, suitable for all types of batch counting, machine cycling and packaging operations. The new Tally-Count is available with a wide range of plug-in sensing devices. For details, check No. 2191 on the coupon, clip and mail.

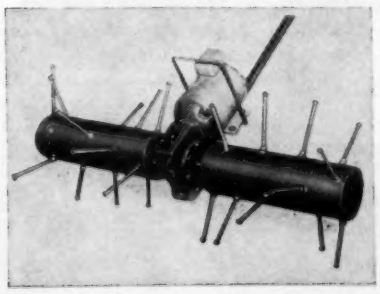
No. 7898—Batching Handbook

A comprehensive automatic batching handbook has been published by the Howe Scale Co. The brochure describes procedures and equipment designed by the company for automatic batching. Advantages of the batching systems are outlined and typical applications of the systems are also

graphically outlined. Controls and indicators or recorders commonly used in the systems are pictured and described. A fold-out section enables the reader to plan a simple automatic batching system for his needs. For copies of the handbook, check No. 7898 on the coupon and mail.

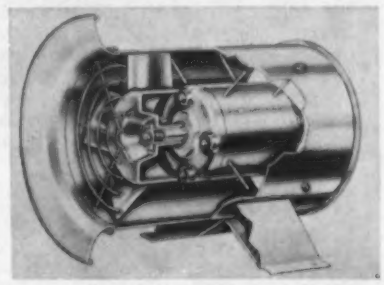
No. 7921—Crust Breaking Machine

A machine designed to break up bin top crusting was introduced by Seedburo Equipment Co. The "Crust-Buster" rakes a 42 in. swath 10 in. deep across the surface of stored grain, the company says, and this prevents damage by dispersing crusts, surface bugs, larvae and meal moth webbing. It also aids aeration of hot spots and cuts down on aeration fan operation, company literature says. It is completely portable and consists of a power handle with ½ h.p. three-phase, 220 volt gearmotor drive, and two 14-gauge drums, each 18 in. long, 8 in. in diameter with 7 in. drum prongs. Weight is 110 lb. For details, check No. 7921 on the coupon and mail.



No. 7870—Drying Fan, Heater

An in-storage grain drying fan and liquid propane jet heater combination with close temperature control has been announced by the Chicago Blower Corp. The precise heat regulation is made possible, the company says, by a Dial-A-Trol temperature control system which incorporates a 100% safety shut off. The drying rate, a 20° F. to 60° F. rise, can be selected by presetting the unit to pro-



APPLYING TECHNOLOGY TO DUST RECOVERY...

Open the housing of the MIKRO-PULSAIRE Collector and you've discovered the secret of finer filtering efficiency and more economical dust recovery. You'll note there are no cams, gears, chains or other high replacement-cost components—no mechanical moving parts whatever! Product of Mikro research and development, the MIKRO-PULSAIRE is a simplified unit that provides full-time automatic cleaning with constant low-differential pressure . . . and a filtering efficiency of 99.9% plus. Maintenance, of course, is virtually eliminated, and bag life increased many times over, especially where abrasive or corrosive materials are concerned. There's a MIKRO-PULSAIRE for every industrial product recovery job, in single or modular units with capacities from 20 cfm to any known requirement . . . and the Mikro Laboratories are at your service to help you select the unit for your particular operation. For the complete story on sizes and capacities write for Bulletin 52A. It's yours without obligation.

MIKRO-Products
PULVERIZING MACHINERY
6 Chatham Rd., Summit, N. J.
A Division of Metals Disintegrating Company
Division of American-Marietta Company

SPAN THE GLOBE

PROCESSING SYSTEMS
GRINDING CONVEYING COLLECTING

REPRESENTATIVES throughout the United States, Continental Europe, British Isles, Canada, Mexico, Central and South America, West Indies, South Africa, India, Japan, Philippines, Australia and New Zealand.
MANUFACTURING FACILITIES: United States, Canada, Continental Europe, British Isles.

duce the drying temperature best suited for prevailing weather conditions and rate of harvest. Once set, the unit automatically maintains the selected temperature. Up to 6,000 bu. of high-moisture grain in storage can be handled, the company says. During interim storage, such as at harvest time, the unit will handle 1,000 bu. grain a day. For details, check No. 7870 on the coupon and mail.

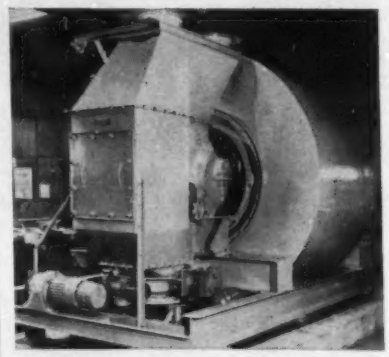
No. 9156—Belt Cleaner

Stephens-Adamson Manufacturing Co. announces the "Spring Type Belt

Cleaner," designed to clean sticking material from high speed conveyor belts. The cleaner consists of a row of thin, spring steel wiper blades, each with an individual pressure spring. The wiper blades are set perpendicular to the belt surface, but diagonal to travel of belt. As the belt passes over the cleaner, each blade wipes a path clean and dry, the company says. As the blades overlap, the entire carrying surface is covered. For additional information, check No. 9156 on the coupon and mail.

No. 9192—Blender, Hopper

An automatic rotary blender and hopper, on a movable bed, has been introduced by Sturtevant Mill Co. According to the company, the unit forms a processing bridge, blending materials as they come from other processes and introducing them directly into the next. A supplemental hopper holds other ingredients to be introduced into the next process, yet keeps them from intermixture with the blending materials until the appointed time. The company makes these blenders available in capacities of from 500 lb. to 20 tons. Hopper capacity is variable. The units are dust-tight and keep their dust seals during filling, discharging and while the blender is in transit. The entire process can be controlled from one panel. For more complete information, check No. 9192 on the coupon and mail.



No. 7852—Dust Filter

An improved design "RJ" dust filter has been added to the line of dust control equipment of the Day Co. A simplified method for maintaining the porosity of the filtering

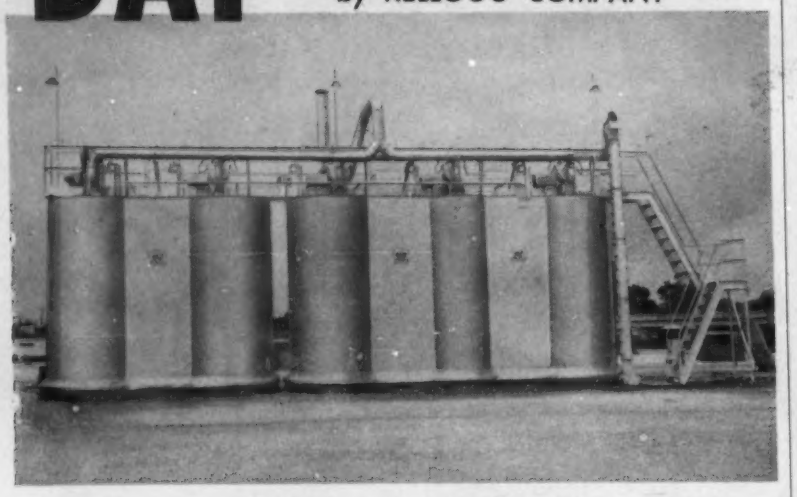
media has been added, the company says, and a reverse air pressure blower has been added. Newly designed air-tight, quick-opening inspection doors are another feature. The filter is available in five sizes in capacities ranging from 285 to 6,400 cu. ft. of air per minute. Larger capacities are furnished by multiple groupings. Single units are supplied with round housings, while multiple units are furnished with square or rectangular housings. More information can be obtained by checking No. 7852 on the coupon and mailing to this publication.

——BREAD IS THE STAFF OF LIFE——

ADDING STORAGE

OSKALOOSA, IOWA—J. H. Wake Co. here has purchased the C. B. & Q. passenger station here from the present owners, the M. & St. L. The building will be razed to provide space for flat grain storage.

DAY *plant proven bulk storage tanks used for rice tempering by KELLOGG COMPANY*



Battery of 5 DAY Insulated Tanks Serving Kellogg's Memphis Plant

Rice for America's most popular rice cereal, Kellogg's Rice Krispies, is tempered in this battery of 5 DAY insulated bulk storage tanks. Located in Kellogg's Memphis, Tennessee, plant, these tanks are 8 feet in diameter and 30 feet high. Designed and built by DAY, they are made of galvanized steel and have 3½ inch insulation covered with an aluminum jacket. In addition to these rice tempering tanks and a bulk sugar storage tank, DAY also supplied dust control equipment including filters and cyclones.

DAY engineered, designed and fabricated this equipment for Kellogg. Experienced DAY construction crews made the installation. Because of this type of service more and more companies are seeking DAY advice and using DAY equipment for pneumatic conveying, bulk storage and dust control. They know this equipment is built for their *specific* plant requirements.

For complete information write toDAY for free bulletins and the address of your nearby DAY representative.

The **DAY** *Company*

SOLD in UNITED STATES by
The DAY SALES Company
822 Third Avenue N.E.
Minneapolis 13, Minnesota

MADE and SOLD in CANADA by
The DAY Company of Canada Limited
Rexdale (Toronto), Ontario, Canada
Fort William, Ontario, Canada

Representatives in Principal Cities

EXPERIENCE ENGINEERED . . . LABORATORY TESTED . . . PLANT PROVEN
Dust Control • Pneumatic Conveying • Bulk Storage
EQUIPMENT . . . SYSTEMS . . . INSTALLATION

Get longer life and better service!

only ROSS gives you **Turn-Tuff Rolls**

Best Grade Solid Chilled Iron
Manufactured by E. R. & F. Turner, World's Largest Roll Maker
Unconditionally Guaranteed

Exclusive with ROSS, these world-renowned rolls are solid-cast and deep-chilled under strict metallurgical control. Turner's exceptionally high standards have been praised by roll users for over sixty years.

Agents in Principal Cities

ROSS
MACHINE & MILL SUPPLY, INC.
Roller Mills, Turn-Tuff Rolls, Corrugating
12 N. E. 28 • Ph. JA 8-2132 • Okla. City, Okla.

Ross Machine & Mill Supply, Inc.
12 N.E. 28th St., Okla. City, Okla.
Gentlemen:
Please send FREE copy of your complete catalog on Ross Roller Mills, Turn-Tuff Rolls, Steamers & Coolers.
Name_____
Firm_____
Address_____
City_____ State_____

T. M. Thompson

T. M. Thompson Elected President Of General American

CHICAGO — T. M. Thompson was elected president of General American Transportation Corp. at a meeting of the company's board of directors following the annual stockholders meeting recently, it was announced by Sam Laud, board chairman.

Mr. Laud estimated 1960 first-quarter earnings would exceed those of any other quarter in the company's history, amounting to slightly more than $5 million on a sales volume of $60 million, or approximately 92¢ a share as against 74¢ a share in the first quarter last year.

Mr. Thompson replaces W. J. Stebler, who has served as president of the firm for the past six years. According to Mr. Laud, Mr. Stebler will remain on the board of directors, and will continue to serve as assistant to the chairman of the board. Mr. Stebler had requested that he be relieved as president.

In announcing Mr. Stebler's retirement, Mr. Laud said, "It is Mr. Stebler's feeling that unless he is to risk impairment of his health, he should be relieved from the pressing demands of his office. Such a decision, so highly personal and of such great significance to the individual involved, hardly allows for any attempt at dissuasion.

"Fortunately for General American, however, Mr. Stebler will continue in the company's employ and as a director, devoting himself to projects and assignments which will enable the company to profit from his vast distinguished experience and abilities, but without the numerous, time-consuming, administrative burdens which the presidency involves."

Mr. Thompson went to work for General American in 1939 in the company's East Chicago, Ind., plant immediately following his graduation from Western Reserve University.

He has spent his entire business career at General American, except for service in World War II with the U.S. Marine Corps, where he rose from private to major.

Following his discharge from the Marines in 1945, he was named manager of the company's Cleveland office and was returned to Chicago in 1952 as assistant vice president.

In November, 1958, Mr. Thompson was elected to the board of directors, and was named vice president in charge of the tank car leasing division.

Mr. Thompson is a member of the Glen View, Union League and Central Rotary Clubs, and the Chicago Athletic Assn.

—BREAD IS THE STAFF OF LIFE—

OILSEED RESEARCH GRANT

WASHINGTON — A grant for research aimed at finding new or improved uses for linseed and soybean oils has been made to the University of Helsinki in Finland by the U.S. Department of Agriculture. It was the only grant completed in the period April 15-21.

International Milling Improves Duluth Grain Handling Facilities

DULUTH, MINN. — An estimated $600,000 is being spent by International Milling Co., Minneapolis, to improve grain handling facilities at its Capitol elevator in Duluth.

The improvements became necessary because of increased grain traffic brought on by the St. Lawrence Seaway, according to a company report.

A new 800-ft. steel sea wall is being built to enable the elevator to handle ocean-going boats to full loading capacity at a 27-ft. depth.

Construction on the new wall began last winter and is expected to be completed soon.

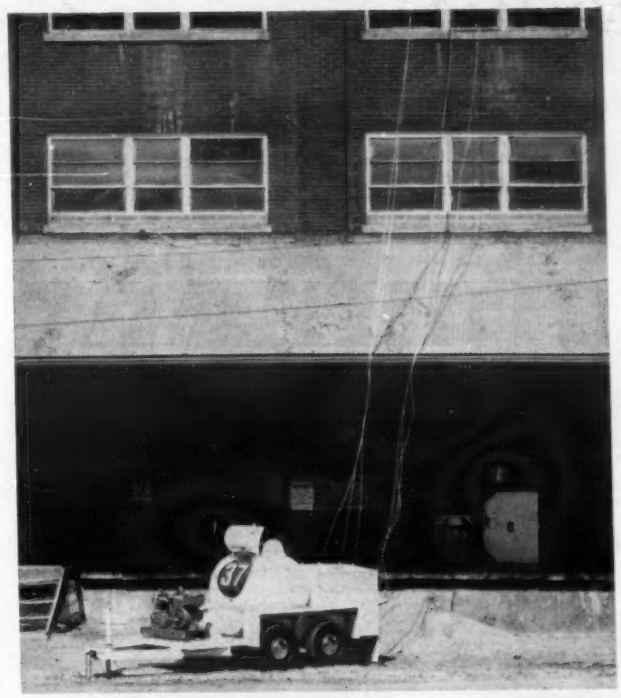
To speed up grain handling at the elevator, a new automatic car unloader is being installed. When completed it will be able to bring a railroad car into the elevator, unload and move it out again in 6½ min.

"The new operation," according to M. M. Beeson, manager, "will greatly expedite unloading of cars during seasonal peak movements of grain,

IMPROVED METHOD for MILL FUMIGATION

with DAWSON® 37 FUMIGANT and the

BULK FUMIGANT APPLICATOR



Polyethylene tubes from applicator unit carry the fumigant to each floor of the mill where it is released through a T-nozzle located at proper point near ceiling. Compressor corrects and evens distribution of fumigant.

- No Cylinders
- No Fans Required
- Greater Safety—Application from outside mill—Fumigant has strong warning odor
- Reduced Inorganic Residues—Lower Dosage Requirement Means Lower Residue

DAWSON 37 Fumigant (U.S. Patent No. 2,606,857) is a mixture of ethylene dibromide and methyl bromide. Proven by laboratory and field tests to be a more effective space fumigant than either of its component chemicals when used alone.

Bulk distribution to strategically located bulk storage tanks, and bulk fumigant applicator units were introduced in the spring of 1959. The superiority of DAWSON 37 fumigant and the bulk applicator were proven in the recirculation fumigation of more than a hundred million bushels of grain, as well as in space fumigation.

DAWSON 37 is also available in various sized cylinders and in cans, if you prefer to perform your own fumigation.

VISIT US AT BOOTHS 47-48 AOM CONVENTION ST. LOUIS, MAY 22-26

Let us show you our new bulk applicator.

Let us arrange to get an estimate for you on your next mill or warehouse fumigation.

DAWSON LOW-DOSAGE FUMIGANTS

FERGUSON FUMIGANTS, Inc.

P.O. BOX 5868 • FERGUSON 35, MISSOURI

and place the empty box cars back in service in one-fourth the time required in the past."

The boxcars are clamped securely at each end by hydraulic lifts which tilt the car sideways at an 18° angle and lift each end of the car in turn, spilling the grain out of the door to the grain pit below.

The unloader is completely automatic. The operator, situated in a glass-enclosed booth, handles the unloading by means of a panel of push buttons. The installation of the new car unloader is being handled by the Lee Turzillo Contracting Co., Cleveland.

The new car unloader will be installed and in operation by mid-August, in time for the movement of the new crop of wheat.

Another improvement now underway is the installation of additional grain spouts higher up on the walls of the elevator. The new spouting will facilitate the loading of ocean-going boats which stand higher off the water.

"The new spouting will increase our loading speed at the elevator from 8,000 bu. an hour to about 30,000 bu. an hour," said Mr. Beeson.

Libya May Support Price of Wheat

WASHINGTON — To encourage wheat production, Libya may support the price of wheat. A support price of $2.44 to $2.59 bu. is reportedly under consideration. Funds for the support would come from an increase in the duty on imported flour. Early in November, 1959, local flour mills were required to use at least 10% homegrown wheat in milling. The government also plans to establish a wheat office to distribute seed and construct storage facilities.

J. W. Flammer Forms New Grain Firm

DOWNEY, CAL.—Jack W. Flammer has announced the formation of J. W. Flammer Co. to engage in the merchandising of grain. Offices are to be located just outside of Los Angeles in Downey.

J. W. Flammer

Mr. Flammer has been associated with his father, C. G. Flammer, in the operation of Flammer Mill & Warehouse Co. and Flammer Grain Co. for the past 15 years.

At present, Mr. Flammer is president of the California Hay, Grain & Feed Dealers Assn., vice president of the Los Angeles Grain Exchange and serves as a director on the board of the Grain & Feed Dealers National Assn. and the National Grain Trade Council.

——BREAD IS THE STAFF OF LIFE——

Pfizer Sales, Earnings Rise in First Quarter

NEW YORK—First quarter sales and earnings of Chas. Pfizer & Co., Inc., were substantially higher than in the same period last year, John E. McKeen, president, told share owners recently at the annual meeting in Brooklyn.

World-wide sales of the drug and chemical firm were $68,722,000, compared with $60,547,000 in the first three months last year, an increase of 13.5%. Earnings were $7,102,000, up 12% from $6,339,000 and were equivalent to 43¢ per common share against 39¢ in the January-March period in 1959.

Mr. McKeen declared that "the company's operations are now well diversified, not only in terms of products, but also in terms of geographical areas. The over-all outlook is good, and we are cautiously optimistic about the balance of 1960."

About 2,000 share owners and guests attended the meeting at the Brooklyn Academy of Music and heard reports on the company's operations from Mr. McKeen and other Pfizer officials. The program was designed to acquaint them with the firm's global activities.

Among the directors reelected was J. Jerome Thompson, Pfizer vice president and general manager of the agricultural division.

——BREAD IS THE STAFF OF LIFE——

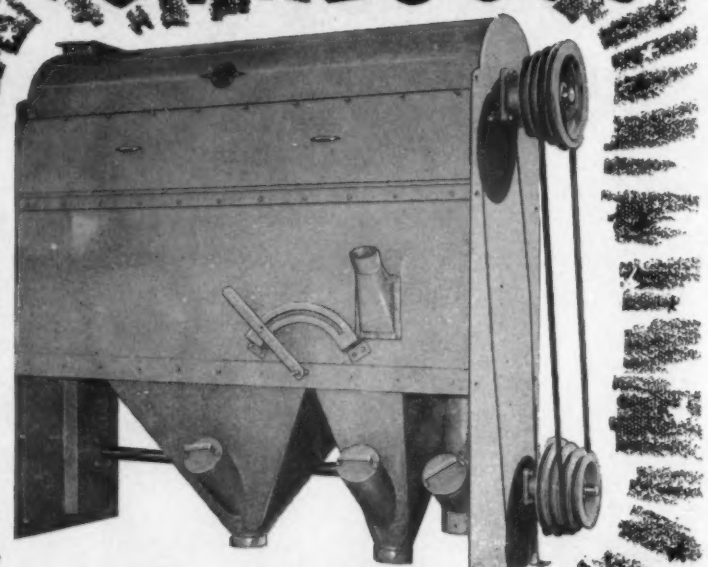
French Government Reviews Durum Rise

PARIS—The government has reviewed the development of durum wheat production in France. Practically unknown before 1950, the area seeded had increased to nearly 73,000 acres in 1959, most of the expansion occurring since 1956. Production of 183,500 bu. in 1959 was 2½ times that of 1957, encouraged by a subsidy on seed, exemption from the normal levy on wheat marketings and an attractive support price of $2.53 bu. compared with the basic price of $2 bu. for soft wheat.

So far, however, French production accounts for only a modest part of the annual requirements of 1,468,000 bu. of durum.

LOST FLOUR IS LOST MONEY . . .
DON'T LET PROFITS "GO UP IN DUST!"

RECOVER EXTRA FLOUR
with a
FORSTER SUPER FLEXIBLE DUSTER



FOR BRAN AND SHORTS

"Convert Needless Waste Into Extra Profits!"

IMPROVED DESIGN . . . New cylinder design adds 60% to the screen area, increasing recovery . . . at a savings in power. Self-cleaning throughout.

TWO SEPARATIONS . . . Now, two separations, give complete control over finished product.

POWER-SAVING ECONOMY . . . Lower speed of operation gives further savings in power.

At your service—We fly our own planes

MANUFACTURING FORSTER COMPANY

FORSTER MANUFACTURING CO., Ada, Okla.
Gentlemen:
Please send complete information on your Super Flexible Duster for bran and shorts.
Name.....
Company Name.....
Address.....
City.....State.....
MP-5

BUILT AT ADA, OKLAHOMA TEL. FEderal 2-6020 ADA

Dip in Earnings For Nine Months Reported by ADM

MINNEAPOLIS — Archer-Daniels-Midland Co. announced net earnings of $2,625,095 for the nine months ended March 31, 1960. That was equal to $1.65 a share on the common stock, compared with $4,341,823, or $2.70 a share, for the same nine months a year ago. The company's fiscal year ends June 30.

Directors of ADM declared a dividend of 50¢ a share, payable June 1 to stockholders of record May 13.

John H. Daniels, president, attributed the reduced earnings largely to the depressed processing margins prevailing in the soybean and flaxseed industries for the past several months. He explained that the margins on oil seeds and wheat flour are too low to return a satisfactory profit, resulting in the shutdown of many of the industries' processing plants, including some of ADM's from time-to-time during the winter months.

Partially offsetting these reduced returns, Mr. Daniels said, was a continuing increase in earnings from ADM's expanding lines in the chemical group.

The ADM president also reported that the company's overseas operations showed a substantial improvement in profit for the first three quarters over last year.

——BREAD IS THE STAFF OF LIFE——

Continental Grain Makes Appointments For Minneapolis Area

NEW YORK — In anticipation of completion the latter part of this year of Continental Grain Co.'s new elevator installation at Savage, Minn., Michel Fribourg, president of the company, has announced some management changes.

Clarence Fivian, vice president, has been appointed manager of the Minneapolis and Savage operations. He formerly was assistant manager of the firm's Chicago office. Mr. Fivian started his career with Continental at the St. Louis office in 1928 and later became manager of the Nashville office until his transfer to the Chicago post. He recently was elected a director of the company.

Leonard Eiseman, assistant vice president, will be assistant manager of the Minneapolis office, where he has been active for a number of years.

Continental's new Savage elevator will have a 5-million-bushel storage capacity. It will be equipped with car and truck dumpers, as well as fast barge loading facilities.

It is expected to be completed in the fall of this year.

GRAIN COMPANY BUYS LAND IN ARKANSAS

HARRISBURG, ARK.—The Morrison-Quirk Grain Corp., Hastings, Neb., has purchased 13,000 acres in Poinsett County, Ark. The purchase arrangement was made with the Jay Tschudy, Jr., interests at Weona, Ark. The grain firm already holds about 20,000 acres of Arkansas farmland in the St. Francis River area. The breakdown of farming on the newly-bought area is an follows: 8,500 acres in soybeans and cotton, 600 acres in second growth timber, and 4,000 acres in the floodway area.

Equipment Installation

DES MOINES — A total of 68 recent installations of Hot Spot Detector, Inc., equipment have been reported by the Iowa firm.

The most installations for any one state were made in Nebraska, 17. Kansas followed with 8, then Texas with 7, Illinois, Indiana and Michigan, 4 each; Minnesota, Iowa, Missouri, Oklahoma and Ohio, 3 each; Utah, 2, and California, South Dakota, Maryland, Louisiana and North Dakota, 1 each.

CAN INCREASE YIELDS

EAST LANSING, MICH. — Nitrogen topdressing on wheat fields can help Michigan farmers increase their wheat yields by 3.25 million bushels or more. Time to apply this fertilizer is in the early spring, recommends James A. Porter, extension soils specialist at Michigan State University. He estimates that at least one half of the 1,100,000 acres of wheat planted last fall need extra nitrogen for top yields. Increased yields from this extra nitrogen in past years have averaged 6 bu. an acre and in some cases, 12 bu.

Joins Grain Firm

STOCKTON, CAL.—Val Olson, a well-known grain merchandiser in northern California, has joined the newly-organized F. B. Young Grain Co., Stockton.

Mr. Olson has been in the grain business for the past 17 years and was associated with the Phil O'Connell Grain Co. for the past eight years. In addition to his grain trading activities, Mr. Olson is a sheep and cattle rancher in the Clements area.

INSIDE SCIENCE LATEST REVISION

The Vital Story of MILLED WHITE RICE

Enriched with Vitamins and Iron for Better Health

by Science Writer

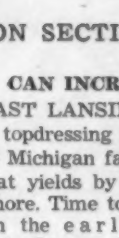
A second "Battle of Bataan" in the Philippines has proven beyond all doubt the value of vitamin enrichment to consumers of white rice.

The famous Bataan experiment in 1948-1950 proved conclusively that whole populations can benefit from enrichment of white rice with vitamins and iron, that disease and death caused by dietary deficiencies can be overcome, that enrichment is a key to better health among infants, children and adults.

What Happened at the Second "Battle of Bataan"

Before the start of the Bataan trial, these facts were evident:

- Polished white rice is the principal food of millions throughout the world. Good food though it is, it lacks several of the key nutrients occurring in the brown rice from which it is milled, and beriberi is often common where white rice is the main food.
- In the Philippines, beriberi was common and mortality from it high.
- Beriberi is caused by insufficient vitamin B_1 in the diet. It yields when vitamin B_1 is given to its victims. It does not occur when human beings receive enough of this vitamin in their diet.
- To prevent beriberi where white rice is the the main food, vitamin B_1 must be added to the diet, either by itself or in food such as rice.
- For centuries it has been universal practice to rinse rice before cooking, hence vitamin B_1 (and any other water-soluble nutrient factor) should be added in such a way that it will not dissolve out.
- Through a process developed in the laboratories of Hoffmann-La Roche, it is possible to enrich white rice with water-soluble vitamins and iron so they will not wash off during this rinsing prior to cooking.



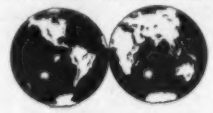
With these facts known, the second "Battle of Bataan" began. Through the cooperation of Philippine public agencies, the Williams-Waterman Fund, the USPHS, and Hoffmann-La Roche a controlled experiment was set up in the province of Bataan. More than 12,000 medical examinations were made, before the enrichment of rice began. Nearly 13% of those examined had beriberi.

Enriched white rice was then put into commerce in the experimental area, but not in the control area.

What happened? *Within two years beriberi was practically wiped out in the experimental zone! . . .* beriberi mortality dropped almost to zero . . . almost 90% who had symptoms of the disease before enrichment's start were free from signs of the disease or were greatly improved . . . thousands of people were helped to better health. News of the success of enrichment reached people in the control area and caused them to demand that their rice be enriched, too.

Other Countries Follow Suit

Word of the excellent results of the Bataan experiment fanned out throughout the world. The largest rice miller in Thailand marketed enriched white rice with success in 1951. In that year, also, the Puerto Rican government enacted legislation requiring that all white rice sold there be enriched, beginning early in 1952. Since then, enriched rice has been made available to the public in Cuba, Venezuela, Colombia, The Dominican Republic, Taiwan (Formosa), Singapore, and Australia.



South Carolina First To Adopt Enrichment

South Carolina, a state having high per-capita white rice consumption, requires by law that all white rice sold there be enriched with vitamin B_1, niacin, and iron, with vitamin B_2 to be included at a later date. This state has required enrichment of white flour and corn meal since 1942 and 1943 respectively.

Federal Standards of Identity Now In Force

The U. S. Food & Drug Administration established the following Standards of Identity for enriched rice which must contain at least 85% of the minimum quantities, shown below, after a rinsing test. If the method of enrichment does not permit this rinsing requirement to be met, consumer size packages must bear the statement: "Do not rinse before, or drain after, cooking."

	Milligrams per pound	
Vitamin	Min.	Max.
Thiamine	2.0	4.0
Riboflavin*	1.2	2.4
Niacin	16.0	32.0
Iron	13.0	26.0

*Optional pending further study

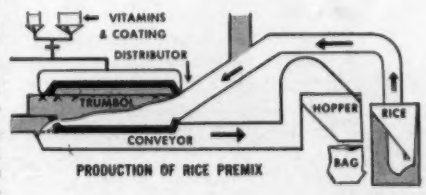
U. S. Federal Specification N-R 351 C requires the same content as the minimum standards shown above.

Popular brands of 'quick cooking' rice are now being enriched with all of the required vitamins.

How Is White Rice Enriched?

The enriching method in widest use throughout the world employs a method developed in the laboratories of Hoffmann-La Roche Inc., pioneers in the research and production of vitamins.

The Roche method impregnates rice grains with thiamine, niacin, (riboflavin, if desired), and iron and adds a final, outer coating of edible material to protect the vitamins against deterioration and preliminary washing and rinsing. For economy large amounts of vitamins are applied to small amounts of rice to make a "premix". One pound of the "premix" is then mixed with a larger quantity (usually 199 lbs.) of ordinary milled white rice at the mill.



What of the Future?

The trend to nutritionally-improved foods for better health is definite. The United States, a world-leader in the enrichment of white flour, white bread, corn meal and grits, farina, pastina, macaroni products, and breakfast cereals is now recognizing the need to enrich milled white rice. *When good foods are made better, everyone benefits.*

This article is part of a series on those processed cereals that are enriched for better nutrition. An illustrated brochure containing all of these Vital Stories is available without charge. Send your request to: Department of Education, Fine Chemicals Division, Hoffmann-La Roche Inc., Nutley 10, N. J.

ROCHE® ©1960 HLR INC.

West Virginia Pulp Makes Promotions

NEW YORK — Promotion of two men to newly-created positions in the Multiwall Bag Division of West Virginia Pulp & Paper Co., New York, has been announced by Victor S. Luke, division manager.

Gilbert H. Dehnkamp has been named quality control director, and Harold H. Rogers has been appointed industrial engineer for the division. They will be headquartered in New Orleans.

Mr. Dehnkamp joined the West Virginia organization in 1954 at the Mechanicville, N.Y., mill, and transferred to the Multiwall Bag Division in 1959. He is a graduate of Rensselaer Polytechnic Institute.

Mr. Rogers, a graduate of Georgia Tech, has been with West Virginia since it entered the multiwall bag field in 1958.

—BREAD IS THE STAFF OF LIFE—

RECORD ACREAGE

WINNIPEG — In Australia, growers are preparing to seed a record acreage to grain in the 1960-61 season and the Australian Wheat Board is already examining the storage position.

NEW GRAIN ELEVATOR

WEST GLENDIVE, MONT.—Construction of a 100,000-bu. capacity grain elevator at West Glendive is planned by Grain Growers, Inc., a farmer-owned corporation, announced Arthur Dietz, secretary-treasurer. More than 80 farmers have purchased stock. The new elevator will be located between Highway 16 and the railroad, across from the new Monarch Lumber Co. Officers besides Mr. Dietz are Kenneth Edwards, president, and Ralph Newson, Bill Wolff, Gordon Kalberg, Lee Gibbs and Howard Bennett, directors.

Allen M. Brown

Sterwin Appoints Allen M. Brown To Sales Post

NEW YORK—Appointment of Allen M. Brown as a technical sales representative of Sterwin Chemicals, Inc., assigned to the company's Evanston, Ill., offices, was announced by William X. Clark, vice president in charge of sales.

Mr. Brown will specialize in sale of Sterwin's line of germicidal and sanitizing agents. He will call on chemical manufacturers, distributors of sanitary supplies, state, municipal and county health officials, and others, in the north-central states.

An alumnus of Purdue University, where he received a B.S. degree in bacteriology, Mr. Brown did postgraduate work at Illinois Institute of Technology.

Prior to joining Sterwin, he was employed by James Laboratories as assistant director of consulting laboratories. He was also associated with Armour & Co. as a bacteriologist.

Mr. Brown is a member of the National Association of Sanitarians.

—BREAD IS THE STAFF OF LIFE—

Dracco Plant Addition Construction Begins

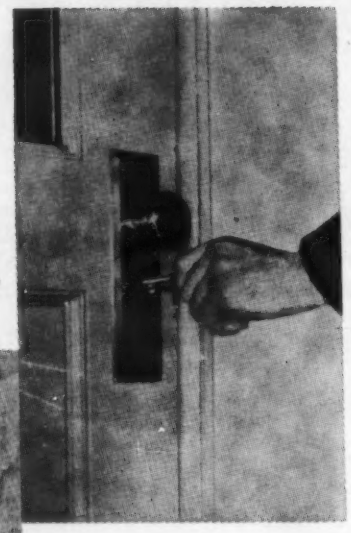
CLEVELAND, OHIO — Construction has been started on a two-story addition to the main plant of Dracco division of Fuller Co., producer of dust collection and pneumatic conveying equipment.

"Production demands brought about by increased sales necessitated erection of the new facility which will house three major departments," company officials say.

The addition, which is scheduled for completion in July, will add more than 18,000 sq. ft. to Dracco's present facilities, raising the total plant area to over 85,000 sq. ft.

Engineering and sewing departments will occupy one wing of the L-shaped addition, the machine shop the other. The 7,000 sq. ft. machine shop will be three times larger than the present shop area and will accommodate four overhead, two-ton cranes for more efficient equipment handling. Other departments, such as sales, accounting and production, will make use of vacated areas in existing buildings.

FIRE PREVENTION IS SIMPLE AS . . . A B C



"LOOK AROUND THE PLANT BEFORE
YOU TURN THE KEY AND LOCK THE DOOR"
IF YOU FOLLOW THIS WISE WARNING
THERE'LL BE WORK FOR ALL NEXT MORNING

IF YOU SMELL OR SEE OR HEAR
SOMETHING DIFFERENT, SOMETHING QUEER
AND CAN'T FIX IT ON THE SPOT
JUST DON'T LET IT BE FORGOT

HERE YOU HAVE THE LOWLY BROOM
PUSHED BY — NEVER YOU MIND WHOM
IF HE GOES IN VIGOROUS STYLE
UP AND BACK DOWN EVERY AISLE
ONLY STOPPING AS HE TURNS
TO SAY, "A CLEAN PLANT SELDOM BURNS!"

"It is awfully hard for a plant to burn
that is kept up and kept clean by careful men"

Mill Mutual Fire Prevention Bureau, 400 W. Madison St., Chicago 6, Ill. (NO. 18, COPIES FOR POSTING ON REQUEST)

ANNOUNCING...

EVERISE*

NEW "STICKY WEATHER" LEAVENING DISCOVERY

NOW... a leavening agent that ends humid weather's threat: "*tired flour*" that barely rises to the occasion. *EVERISE*, remarkably stable new sodium acid phosphate leavening agent, simply will not hydrate before use... no matter how high the humidity climbs. *EVERISE* in your self-rising flour and dry mixes will *guarantee* housewives fluffy, high-volume bake goods all summer long... even with that last cup from the container (the cup that makes or loses a repeat sale).

EVERISE blends easily... is exceptionally free-flowing, yet very low-dusting (dust number: 35). Just fine for automatic feeding. Get all the facts on *EVERISE*. Mail the coupon, today.

**Monsanto Trademark (Reg. Pending).*
Packaged in bags antislip-treated with Syton®P for easier handling and stacking.

Monsanto®

We look forward to seeing you at the 64th Annual Technical Conference of the Assn. of Operative Millers... May 23-26, at the Sheraton-Jefferson Hotel in St. Louis.

MONSANTO CHEMICAL COMPANY,
Inorganic Chemicals Division,
St. Louis 66, Mo.

I would like: ☐ more facts on Everise; ☐ sample for testing; ☐ technical assistance in formulating.

*Name*_____ *Title*_____

*Company*_____

*Street*_____

*City*_____ *State*_____

the NORTHWESTERN MILLER
THE INTERNATIONAL NEWS MAGAZINE FOR THE GRAIN, MILLING AND BAKING INDUSTRIES
Record Wheat Carryover Seen for Crop Year End 9
U.S. Flour Exports Zoom to New Heights 10
Storage Growth Predominates in Southwestern Area 13
Technologists Plan to Reduce Mill Building Costs 64
a miller publication • business journalists since 1873

Cover of the pilot issue of the new Northwestern MILLER provides a new "wrapping" for a new editorial concept, including many new features and departments.

Every issue of the new Miller will be read by approximately 3,000 flour milling and grain industry management personnel.

In addition, alternate issues of the new Miller will have additional controlled circulation to about 2,000 flour mill superintendents, head millers, cereal chemists and other operating personnel—important buying influences in the selection of equipment and supplies for the principal mills producing 98% of the flour.

This combination of coverage at the management and production levels represents the greatest depth of penetration of the flour milling and grain industry market of any publication in the field.

ISSUE DATES OF THE NEW MILLER

. . . with issues having additional controlled circulation to milling technologists in color . . .

1960		1961	
July 11	Oct. 3	Jan. 9	April 3
July 25	Oct. 17	Jan. 23	April 17
	Oct. 31		
Aug. 8		Feb. 6	May 1
Aug. 22	Nov. 14	Feb. 20	May 15
	Nov. 28		May 29
Sept. 5	Dec. 12	March 6	June 12
Sept. 19	Dec. 26	March 20	June 26

. . . a new publication concept of importance to advertisers interested in reaching the flour milling industry in depth . . .

STATES—	*Management Personnel	**Operative Personnel	Total Circulation
Alabama	15	8	23
Arizona	7	5	12
Arkansas	9	1	10
California	147	66	213
Colorado	32	37	69
Connecticut	20	5	25
Delaware	3	..	3
District of Columbia	64	6	70
Florida	25	4	29
Georgia	36	16	52
Hawaii	1	..	1
Idaho	9	23	32
Illinois	232	114	346
Indiana	52	50	102
Iowa	41	28	69
Kansas	104	189	293
Kentucky	20	41	61
Louisiana	20	1	21
Maine	9	..	9
Maryland	44	14	58
Massachusetts	68	6	74
Michigan	92	68	160
Minnesota	468	248	716
Mississippi	2	5	7
Missouri	176	125	301
Montana	31	26	57
Nebraska	49	42	91
Nevada	..	..	..
New Hampshire	11	1	12
New Jersey	56	20	76
New Mexico	..	3	3
New York	328	168	496
North Carolina	36	59	95
North Dakota	25	14	39
Ohio	125	74	199
Oklahoma	36	63	99
Oregon	80	39	119
Pennsylvania	155	47	202
Rhode Island	11	..	11
South Carolina	5	25	30
South Dakota	5	10	15
Tennessee	32	49	81
Texas	91	113	204
Utah	14	32	46
Vermont	2	1	3
Virginia	29	43	72
Washington	71	63	134
West Virginia	15	7	22
Wisconsin	89	15	104
Wyoming	1	3	4
U.S. TOTALS	2,993	1,977	4,970
8th Zone	..	..	..
Pan America	..	..	..
Canada	173	41	214
Foreign	276	96	372
TOTALS	3,442	2,114	5,556

* Flour milling, grain industry and baking (500 of largest bakeries with annual sales exceeding $750,000) receive every issue of the new Miller.

** Flour mill superintendents, head millers and cereal chemists receive alternate issues.

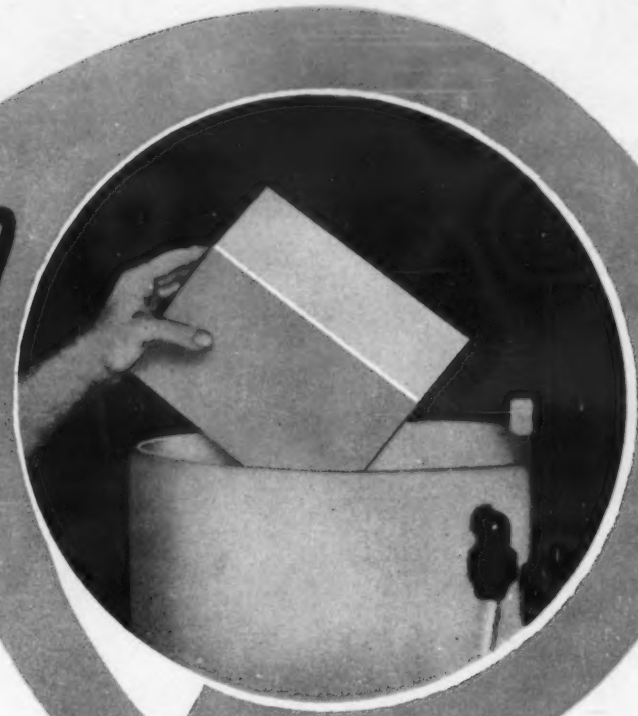
The Miller Publishing Company

Business Journalists Since 1873

2501 Wayzata Boulevard Minneapolis 40, Minn.

New York Chicago Kansas City

COMPLETELY CONTROLLED Flour Treatment Starts Here...



From first step to last, HY-KURE® controls every phase of maturing. That's why HY-KURE provides the world's most uniform flour treatment.

CONTROL 1.

Chlorine dioxide solution is made by immersing exclusive, scientifically uniform Blockette . . . purified ClO_2 in frozen form . . . in tap water in HY-KURE vat (illustration). No guesswork, no measuring . . . a controlled amount of ClO_2 dissolves in a controlled amount of water. Uniform solutions EVERY time.

CONTROL 2.

Accurate solution becomes accurate ClO_2 gas through controlled, foolproof process. Uniform concentration of gas EVERY time.

CONTROL 3.

Accurate gas is then precisely metered to the individual agitators by HY-KURE'S pin-point controls. Uniform flour treatment EVERY time.

● HY-KURE eliminates old gas generator and the need for constant watching, checking, resetting controls.
And HY-KURE's completely controlled flour treatment can be installed in your plant without interruption of your flour production.

GET THE FACTS ON HY-KURE

from Your Sterwin Representative or Write, Wire, Phone direct:

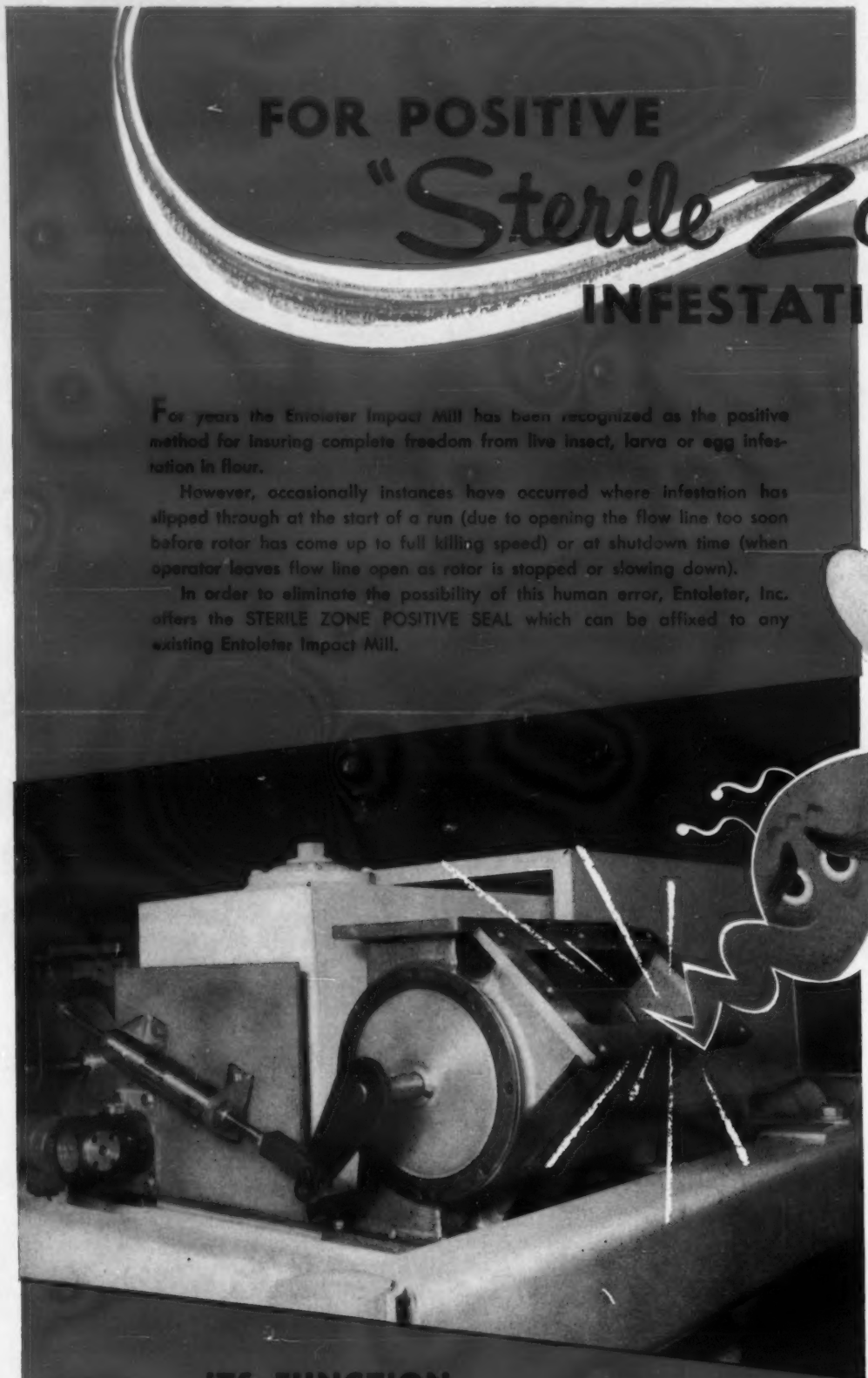
Sterwin Chemicals INC.
Subsidiary of Sterling Drug Inc.
Flour Service Division
1125 MERRIAM BLVD., KANSAS CITY, KANSAS

FOR POSITIVE "Sterile Zone" INFESTATION CONTROL

For years the Entoleter Impact Mill has been recognized as the positive method for insuring complete freedom from live insect, larva or egg infestation in flour.

However, occasionally instances have occurred where infestation has slipped through at the start of a run (due to opening the flow line too soon before rotor has come up to full killing speed) or at shutdown time (when operator leaves flow line open as rotor is stopped or slowing down).

In order to eliminate the possibility of this human error, Entoleter, Inc. offers the STERILE ZONE POSITIVE SEAL which can be affixed to any existing Entoleter Impact Mill.



ITS FUNCTION

The STERILE ZONE POSITIVE SEAL automatically opens the flow line at the machine only when rotor speed reaches 100% efficiency and closes the line completely before the rotor speed is reduced below this point. This foolproof control eliminates any possibility of contamination of the STERILE ZONE product.

Bakers today demand a sterile product . . . Entoleter Infestation Control equipment assures it. Write to Entoleter for further information on the Entoleter Impact Mill and STERILE ZONE POSITIVE SEAL.

ENTOLETER INC.
SUBSIDIARY OF AMERICAN MANUFACTURING CO., INC.
P.O. Box 904 • New Haven 4, Connecticut